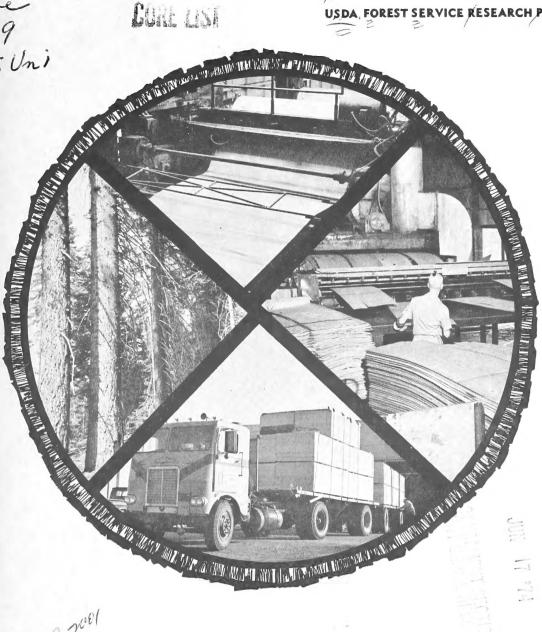
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# VENEER RECOVERY OF RED AND WHITE FIR - CALIFORNIA GALIES

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## 417246

#### **ABSTRACT**

Red and white fir grade recovery percentages are presented by log and veneer block diameter classes.

Less than 1 percent of veneer was recovered in A and B grades. About 55 percent of both the log volumes or block volumes was recovered as dry, untrimmed veneer. Relationships of recovery ratio and square feet or cubic feet of veneer to log volume are shown.

Keywords: Veneer mill studies, red fir, Abies magnifica, white fir, Abies concolor.

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#### **ACKNOWLEDGMENTS**

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#### INTRODUCTION

The true firs (Abies spp.) represent approximately 13 percent of the commercial sawtimber volume in the Western United States. This amounts to nearly 235 billion board feet. In California the true firs comprise about 25 percent of the softwood sawtimber volume. In the central Sierra of California, nearly 50 percent of the sawtimber volume is composed of California red fir (A. magnifica A. Murr.) and white fir (A. concolor (Gord. and Glend.) Lindl.).

Both these species have increased in importance as raw material for the wood using industry. However, only a small number of mills use true fir in plywood. In 1970, over 620 million board feet, log scale, of red and white fir were produced from National Forest lands in California; in contrast, these same Forest lands produced about 380 million feet in 1960.

With expanded utilization of the true firs, a need has developed for up-to-date information on grade and volume recovery of lumber and veneer from these species. To provide this information, the Pacific Northwest Forest and Range Experiment Station conducted this study in cooperation with other public agencies and the forest products industry.

Veneer yield information is presented according to current Forest Service Region 5 log grading and scaling practices for short logs.

Forest managers, timber buyers, and forest industry plant managers will find this report useful in estimating veneer grade and volume recovery.

The volume losses in red and white fir plywood production can be estimated from other reports (8,10).

#### STUDY PROCEDURE

Sampling

The timber sample was divided into two segments, one for processing in a veneer plant and one for processing at a sawmill. This report presents the peeling or veneer recovery phase. The lumber recovery phase will be discussed in a separate report.

Trees for the study were selected from 18 areas located on the Tahoe, Eldorado, and Stanislaus National Forests in the central Sierra Nevada of California. Area locations are shown in figure 1. The sample of 123 trees, including both California red fir and white fir, represented the full range of size and quality of true fir timber in the central Sierra Nevada. Individual trees were stratified on the basis of size, butt log grade, \( \frac{1}{2} \) and defect classes (5).

<sup>1/</sup> Based on Forest Service Region 6 west-side Douglas-fir log grades without diameter limits.



Figure 1.--Approximate locations of timber sample areas (•) and study mill (\*).

Each tree was examined before it was felled, and surface characteristics for the first 32 feet were diagramed (1, 3). The felled trees were bucked into logs of multiple 8-foot block lengths. Small unpeelable logs from the upper part of the tree and segments less than 8 feet long were not considered study material and were not processed. Maximum bucked length was 34 feet.

#### Log Diagraming, Scaling, and Grading

Before the bucked logs were skidded, visible log surface characteristics were diagramed, tree and log diameters and lengths were recorded, and logs were tagged for identification. Logs delivered to the mill were decked and kept under water spray until removed for debarking and bucking into blocks the day before they were peeled. These blocks were scaled (6) and retagged for identification. Individual blocks and short logs (composite of two blocks) were graded by applying the Forest Service grades for white fir to the log surface diagrams (7).

#### Peeling, Drying, and Grading

According to mill practice, all study blocks were steamed for approximately 18 hours at 180° F. The 977 blocks in the study ranged from 7 to 48 inches in small-end diameter. Block lengths and diameters were measured before they were peeled.

All blocks were peeled on a single 8-foot lathe with blocks positioned and chucked in the geometric center. Minimum core size possible was about 6 inches. The diameter of the peeler core, its condition (rotten, checked, or shattered due to spin-out), and its disposition (chipped, sawn into lumber, or burned) were recorded.

Veneer was peeled into 1/10-, 1/8-, and 3/16-inch thicknesses. A single block was peeled into only one thickness. Throughout the peeling phase of the study, a quality supervisor from the American Plywood Association made periodic checks on the quality and thickness of the peel.

Study blocks were peeled in groups of 20; block identity of individual pieces of veneer was maintained by color coding all veneer from a given block with a continuous stripe of water-soluble dye sprayed on the tight side of the veneer as it was peeled from the block (2). Green veneer from each of the 20-block groups was clipped, sorted, and stored separately from other 20-block groups of veneer. Loads of green veneer from a given group were color coded for group identity before storage.

Green veneer items produced in this study included full sheets, half sheets, and random width strips in 4- and 8-foot lengths. The veneer was sorted onto carts by automatic pullers, except for 4-foot strips (fishtails) which were hand-pulled. Sapwood and heartwood veneer pieces were not separated at the green chain.

All veneer was dried by green item and thickness. The color code identity of veneer from each block in the group of 20, for a given item and thickness, was maintained during drying, grading, and tallying.

Dry veneer was graded by and under the supervision of the American Plywood Association quality supervisors. Grading was by U.S. commercial standards (4): A, A patch, B, B patch, C, C plug, D.

Each piece of veneer was tallied separately by grade, block, color code, and 20-block group number. Full sheets were dried separately and graded and tallied as they were pulled onto the dry sorting table. Half sheets and random width strips of veneer were dried together and graded as they came from the dryer. Half sheets were tallied as they were pulled onto the dry sorting table, but random width veneer was pulled onto carts then tallied by piece.

Dry veneer with isolated large defects which could be upgraded by reclipping was marked "reclip" and was pencil clipped and tallied as random width. Minimum reclipping width was 8 inches. Below grade veneer utilized by the mill was tallied but reported separately from graded veneer. Veneer needing redrying was pulled, graded, and tallied without going through the dryer again.

#### Compilation of data

Veneer recovery was summarized by grade, size, and peeler block number by use of computer programs (9) developed to handle veneer recovery data. Outputs from these programs include veneer grade yield in square-foot and cubic-foot volumes, recovery by block and log diameter classes, distribution of veneer by grade and piece size. The tally of dry, untrimmed veneer obtained from the peeled blocks was compiled into veneer grade yields on a square-foot, 3/8-inch basis.

The veneer grade yield for the short logs was obtained by combining the block veneer recovery of successive pairs of blocks from each sample tree. The cubic volumes of the blocks, veneer, core, below grade veneer, and residue were calculated.

The gross cubic block volume was computed by the following formula:

Gross cubic-foot volume = 0.001818L( $D_S^2 + D_S D_L + D_L^2$ )

Where

0.001818 is a constant;

L is the actual block length in feet;

 $\boldsymbol{D}_{\boldsymbol{S}}$  is the average block diameter, small end, in inches; and

 $\ensuremath{\mathcal{D}_{L}}$  is the average block diameter, large end, in inches.

Individual peeler blocks were summed to provide the cubic volume of short logs.

Residue veneer volume was obtained by subtracting the total veneer, core, and below grade veneer volumes from the gross block volume. The residue total, therefore, includes spur and roundup, green clipper, and dryer losses.

#### RESULTS

The graphs in figures 2 and 3 indicate the relative distribution of the short logs and peeler blocks by log grade. The 479 short logs produced 416,908 square feet of veneer, 3/8-inch basis. A summary of the total scale and cubic volumes of these logs for each log grade is presented in table 1. Detailed log volumes and distributions by log grade and diameter class are presented in Appendix A, tables 5 to 19. Blocks and logs were graded by the same log grade specifications.

The 977 veneer blocks produced 416,652 square feet of veneer. A summary of log scale and cubic volume is presented in table 2. Detailed volumes by log grade and diameter class are presented in appendix B, tables 20 to 34.

There is a difference between the total veneer volume shown for the short logs and that for blocks because any cull (less than one-third sound) veneer block that was bucked from a noncull short log but produced veneer was included with the adjacent block. However, these cull blocks, along with the small amount of veneer they produced, are not included in the tables of individual block data.

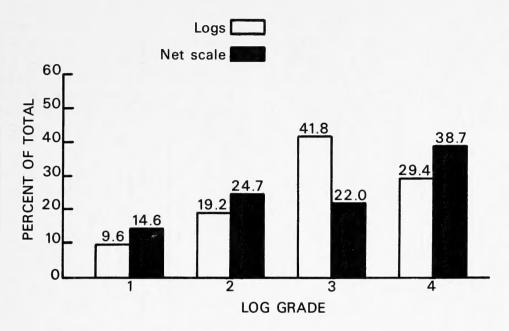


Figure 2.--Distribution of 479 red and white fir logs by percentage of total number of logs and net scale for each log grade.

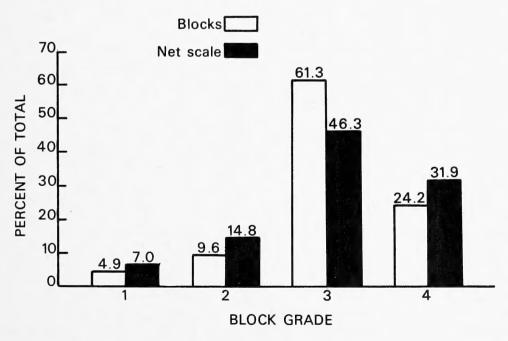


Figure 3.--Distribution of 977 red and white fir veneer blocks by percentage of total number and net scale for each block grade.

Table 1.-Total scale, veneer tally, and cubic volumes of red and white fir logs by log grade

		Sci	Scale	Veneer tally	tally			Volume			
Log grade	Number of logs	Gross	Net	Volume, 3/8-inch basis	Recovery ratio	Block	Veneer	Veneer	Below grade veneer	Core	Residue
		Board feet	i feet	Square feet		Cubic feet	feet	Percent	1 1 1	- Cubic feet	et
1	97	26,190	23,530	65,273	2.77	3,593.45	2,145.65	59.71	41.21	284.03	1,122.56
2	92	46,260	40,020	107,392	2.68	6,411.96	3,535.60	55.14	100.64	591.48	2,184.24
9	200	37,340	35,630	96,621	2.71	5,823.48	3,169.27	54.42	90.19	976.76	1,587.26
4	141	67,360	62,470	147,622	2.36	9,219.14	4,867.35	52.80	217.43	982.32	3,152.04
All grades	479	177,150	177,150 161,650 416,908	416,908	2.58	25,048.03	13,717.87	54.77	449.47	2,834.59	8,046.10

Table 2.—Total scale, veneer tally, and cubic volumes of red and white fir blocks by block grade

մորեթո	Scale	Venee	Veneer tally			Volume			
of Gross	Net	Volume, 3/8-inch basis	Recovery ratio	Block	Veneer	Veneer	Below grade veneer	Core	Residue
Board	feet	Square feet		Cubic feet	feet	Percent	1 1 1	- Cubic feet -	
13,300	11,370	32,310	2.84	1,929.19	1,062.07	55.05	29.15	160.03	677.94
26,960	24,010	63,655	2.65	3,832.45	2,096.03	24.69	57.17	312.82	1,366.43
80,220	75,340	199,829	2.65	11,554.90	6,568.01	56.84	179.92	1,509.19	1,509.19 3,297.78
55,600	51,960	120,858	2.33	7,655.68	3,983.29	52.03	180.01		835.29 2,657.09
977 176,080	162,680	416,652	2.56	24,972.22	13,709.40	54.90	446.25	54.90 446.25 2,817.33 7,999.24	7,999.24

#### Scaling Defects

All logs in this report are at least one-third sound as determined by the scaler. Figure 4 presents the relationship of defect percentage (Scribner scale) to log and block diameter for all grades combined. Average scaling defect percentage was 8.7 for short logs and 7.6 for peeler blocks.

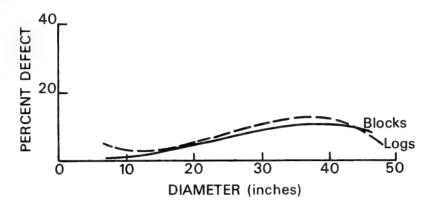


Figure 4.--Relationship of percent defect to diameter for woods-length red and white fir logs and veneer blocks.

#### Veneer Recovery Ratio

The range in veneer recovery volume and recovery ratio can be compared by log grade and diameter class from appendix A, tables 5 to 9, and appendix B, tables 20 to 24. Veneer recovery ratio is square feet of dry, untrimmed veneer (3/8-inch basis) per board foot of net log or net block scale. Figure 5 shows the relationship of the recovery ratios to scaling diameter for all log grades combined. Although average recovery ratios shown in the tables differ between log grades, they are somewhat similar for logs of the same diameter classes.

#### Cubic Recovery Percentage

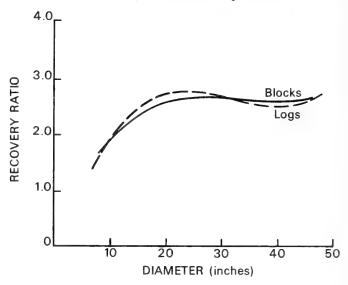
The veneer recovery percentages are similar among the four log and block grades (tables 1 and 2). With short logs, the cubic recovery decreased from 59.71 percent for grade 1, to 52.8 percent for grade 4, table 1. The relationship of cubic recovery ratio to block and log scaling diameter is shown in figure 6. Figure 7 shows for this sample the number of square feet of veneer (3/8-inch basis) that was produced per cubic foot of log or block volume. A mill manager having a cubic estimate of log or block input to the veneer mill could use figure 7 to estimate the total square-foot recovery volume that could be expected from the logs or blocks.

LOGS:

 $Y = -0.523174 + 0.349716(D) - 0.011836(D^2) + 0.000124(D^3)$ 

 $Y = 0.206857 + 0.234081(D) - 0.007238(D^2) + 0.000072(D^3)$ Y is recovery ratio, D is block or log diameter.

Figure 5.--Relationship of veneer recovery ratio to log and block diameters of red and white fir. Recovery ratio is square feet of dry, untrimmed veneer, 3/8-inch basis, per board foot of net scale.



LOGS:  $\textit{Y} = -0.417865 + 0.100024(\textit{D}) - 0.003217(\textit{D}^2) + 0.000033(\textit{D}^3)$  BLOCKS:  $\textit{Y} = -0.482209 + 0.107703(\textit{D}) - 0.003599(\textit{D}^2) + 0.000039(\textit{D}^3)$  Y is cubic ratio, D is block or log diameter.

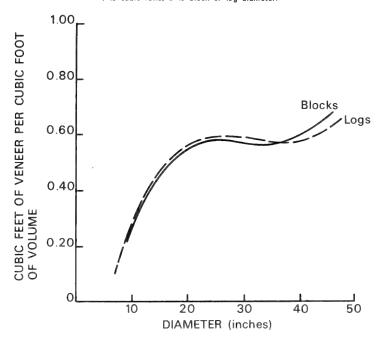


Figure 6.--The relationship of cubic feet of veneer volume per cubic foot of log and block volume for red and white fir by diameter.

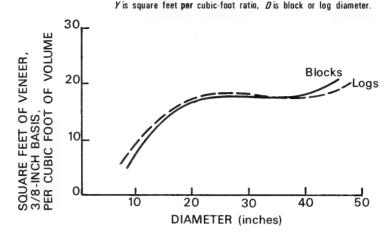


Figure 7.--The relationship of square feet of veneer (3/8-inch basis) per cubic foot of log or block volume for red and white fir by diameter.

The following example uses both the recovery ratio data in figure 5 and square feet per cubic foot curves in figure 7.

A mix of log lengths and diameters could be used. However, assume for these examples an average scaling diameter of 18 inches and a 17-foot scaling length for 250 logs.

Example using square feet to cubic-foot ratio:

Gross scale = 57,500 board feet, Scribner Net scale = 52,325 board feet, Scribner

Average cubic feet per log = 34.5 (calculated from number of logs and cubic log volume for 18-inch logs, appendix A, table 9)

Total cubic feet in example = 8,625.

The yield from 18-inch logs was 16.4 square feet of veneer, 3/8-inch basis, per cubic foot of log (read from short log curve, 18-inch diameter, fig. 7).

 $250 \log s = 141,450 \text{ square feet, } 3/8\text{-inch basis.}$ 

Example using recovery ratio:

Recovery ratio for 18-inch logs = 2.65 (read from short log curve for fig. 5).

Recovery ratio of square feet of 3/8-inch veneer per board foot net scale =  $2.65 \times 52,325 = 138,661$  square feet, 3/8-inch basis.

Calculations by the two methods result in a difference of about 2 percent or 2,789 square feet of veneer, 3/8-inch basis.

The calculations in each example could be made using the overall study ratios of 16.64 square feet per cubic foot and 2.58 square feet per board foot net scale.

#### Veneer Grade Recovery

The veneer recovery volume for each veneer grade produced from logs of various diameter classes is requested often by forest product industry representatives. This report provides this information for red and white fir. Tables 3 and 4 show the average veneer recovery percentages by each log grade for logs and blocks. A more detailed description of veneer grade recovery by log grade and diameter classes for short logs is shown in appendix A, tables 10 to 14, and for veneer blocks, in appendix B, tables 25 to 29.

The actual or uncurved distributions of veneer grade percentages by diameter classes in appendix A and appendix B are presented as regressions in figures 8 and 9. A detailed discussion of all appendix tables is not justified. However, the regression curves point up obvious grade recovery information. For short logs, the volume of B patch and better veneer recovered was only slightly over 1 percent, regardless of the grade. The percentage of C veneer was nearly as high for grade 3 as for grade 2 (56.4 and 59.2 percent, respectively). Of all veneer from grade 4 logs, 83 percent was grade D; 21 percent of the veneer from grade 1 logs was grade D; for all short logs in the study, 51.3 percent of the veneer product was grade D.

The individual veneer blocks present a similar pattern of veneer grade recovery. The percentage of C veneer decreases in rather uniform increments from grade 1 to 3 (table 4). However, it then drops sharply from 46.1 to 10.5 percent for grade 4. Both short logs and blocks had a similar C plug veneer grade recovery. Short log grades 1 and 2 recovered 18.1 and 16.0 percent of C plug, and grades 3 and 4 recovered 5.5 and 5.1 percent. Individual veneer blocks recovered 20.9 and 20.2 percent of C plug for grades 1 and 2 but recovered only 8.3 percent for grade 3 and 4.7 percent for grade 4. These percentages are summarized in tables 3 and 4.

#### Veneer Item Recovery

Distribution of the veneer volume by grade and item is shown for short logs in appendix A, tables 15 to 19, and for blocks in appendix B, tables 30 to 34. Veneer thickness is shown for each item size--full sheets, half sheets, and random width veneer. Approximately 33 percent of the volume from woods-length logs was peeled as 1/10-inch veneer, 49 percent as 1/8-inch veneer, and 18 percent as 3/16-inch veneer.

Table 3.—Average veneer grade recovery of short logs of red and white fir by log grade

Log	Number	Veneer volume,			Λ	Veneer grade			
grade	logs	3/8-inch basis	A	A patch	В	B patch	υ	C plug	Q
		Square feet	1 1 1	1 1 1 1	1 1 1	- Percent -	1 1	1 1 1 1 1	! ! !
1	97	65,273	0	0	0.3	1.0	59.2	18.1	21.4
2	92	107,392	0	0	(1/)	(1/)	46.4	16.0	37.6
8	200	96,621	(1/)	0	(1/)	0	56.4	5.5	38.1
7	141	147,622	0	0	.1	. 0	11.8	5.1	83.0
All grades	479	416,908	(1/)	0	1.	.2	38.4	10.0	51.3

 $\frac{1}{2}$  Less than 0.05 percent.

Table 4.—Average veneer grade recovery of red and white fir by block grade

	D	1 1 1	12.5	25.1	45.6	84.8	51.3
	C plug	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	20.9	20.2	8.3	4.7	10.0
	υ	1	65.1	53.9	46.1	10.5	38.4
Veneer grade	B patch	- Percent	1.0	9.	0	0	.2
Ve	В	1	0.5	.2	(1/)	(1/)	.1
	A patch	1 1 1	0	0	0	0	0
	A	1 1 1	0	0	(1/)	0	(1/)
Veneer volume,	3/8-inch basis	Square feet	32,310	63,655	199,829	120,858	416,652
Number	blocks		48	94	599	236	977
Block	grade		П	2	e.	7	All grades

 $\frac{1}{2}$  Less than 0.05 percent.

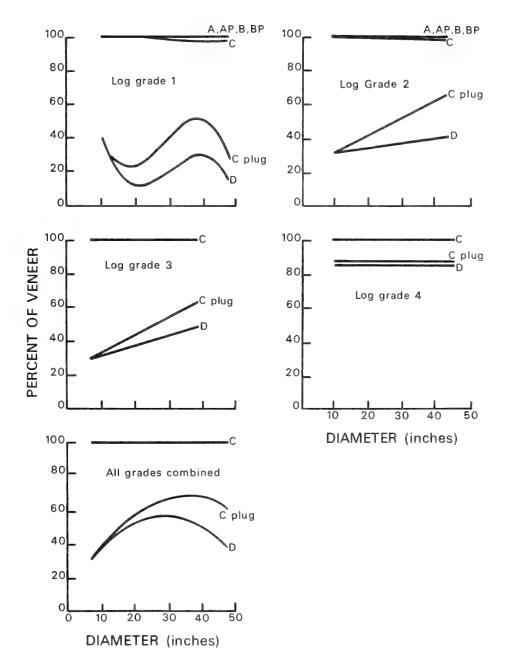


Figure 8.--Recovery of veneer grades by log scaling diameter for each log grade and all logs combined; AP is A patch, BP is B patch. For grades 3 and 4 and all grades combined, A, AP, B, and BP are less than 1 percent of total.

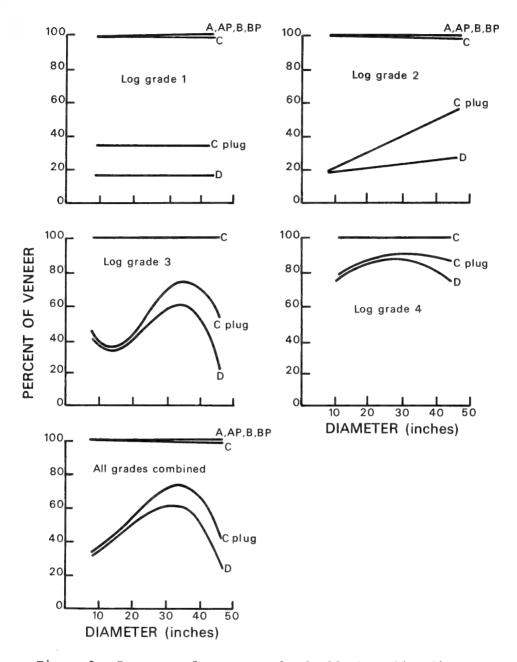


Figure 9.--Recovery of veneer grades by block scaling diameter for each block grade and all blocks combined; AP is A patch, BP is B patch. For grades 3 and 4, A, A patch, B, and B patch have insufficient data for plotting.

A separate column is included in these tables for below grade veneer. This represents veneer clipped and dried for use in mill-certified plywood panels. Grade D specifications admit some rot in the veneer sheet. Some of the below grade veneer was produced from veneer with amounts of rot that exceeded the grade D specification.

The green veneer full sheets were peeled and clipped to approximately  $52\frac{1}{2}$  by 101 inches. The resulting dry veneer sheet averaged slightly over 51 by 101 inches.

Veneer production from individual blocks was almost equally divided among the three veneer items: full sheets, 34.1 percent of the volume; half sheets, 34.2 percent; and random width strips, 31.7 percent.

#### CONCLUSIONS

The veneer grade recovery from the mix of red and white fir logs in this study was less than 1 percent A and B grade veneer. There was no significant difference in veneer grade recovery between No. 1 and No. 2 grade logs. However, grade C veneer recovery ranged from 59 percent for No. 1 logs to 12 percent for No. 4 logs.

Approximately 55 percent of the cubic volume of the short log or block was recovered as dry, untrimmed veneer.

The overall average veneer recovery ratio was 2.58 based on total net scale and total dry, untrimmed veneer. This would be reduced by about 16 percent by losses in plywood production from the dryer through panel trimming.

A veneer mill can use this information to estimate total square-foot, 3/8-inch basis, production from known scale or cubic volume of logs or blocks. Veneer grade production can be estimated from curves of grade recovery.

The overlapping and similarity of veneer grade recovery between log grades indicates the need for a revised red and white fir log grade or quality estimating system.

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### APPENDIX A

LOGS

Table 5.—Log scale, veneer tally, and cubic volumes by scaling diameter, grade 1 red and white fir logs

Log	Number	Scé	Scale	Veneer tally	tally			Volume	٥		
scaling diameter (inches)	of logs	Gross	Net	Volume, 3/8-inch basis	Recovery	Log	Veneer	Veneer	Below grade veneer	Core	Residue
		- Board feet	1	Square feet		Cubic	feet	Percent	1 1	Cubic feet	1 1 1 1
11	П	70	70	110	1.57	13.52	3.65	27.00	0.09	3.96	5.82
12	0	1	1	1	!	}	1	1	1	ŀ	!
13	9	009	570	1,288	2.26	121.17	42.48	35.06	3.32	30.73	79.77
14	2	240	210	562	2.68	42.55	18.68	43.90	.63	8.10	15.14
15	1	150	150	677	2.99	22,42	14.87	66.32	0	3.96	3.59
16	0		1	!	1	1	1	1	1	1	!
17	2	400	360	953	2.65	63.99	31.58	49.35	1.06	15.26	16.09
18	3	069	099	1,821	2.76	104.25	59.72	57.28	2.41	13.22	28.90
19	-	250	220	729	3.31	43.20	24.13	55.86	.15	3.84	15.08
20	7 -	930	910	1,463	2.44	87.90	47.45	53.98	.87	8.37	31.21
17		320	OTC	777	10.0	60.04	01.30	T7:/0	7 1	0 1	01.1
23	o «	1 200	1 120	3 079	2.75	171.81	100.88	58.72	82	12.20	57.91
24	0	0 1	1		0 1	1 1		1 1		1 1	!!!
25	5	2,450	2,170	5,244	2.42	339.49	172.67	50.86	4.23	44.85	117.74
26	_	530	,490	1,515	3.09	78.93	96.65	63.30	77.	3.90	24.63
27	7	580	530	1,559	2.94	99.07	51.61	73.04	.32	3.96	14.77
28	1	620	260	1,749	3.12	94.48	57.92	61.30	1.24	3.90	31,42
29	0		1	1	i i	1	1		-	-	1
30	0	1	1	-	1 :	1 1	1 3	1 :	1 3	1 3	1 0
31	7	3,000	2,430	5,875	2.42	437.27	193.04	44.15	11.36	29.38	203.49
32	⊣,	780	0/9	2,211	3.30	97.70	/3.15	/4.8/	96.	3.72	19.87
33	Н ғ	830	750	2,092	2.79	105.70	69.27	65.54	62.	7.58	28.26
34	F	820	0//	2,192	2.85	1208.45	72.31 01.06	00.00	7 53	3.00	70 67
25	٦ ,	930	030	2,430	2.30	65.671	170 17	02.37	1.32	06.6	43.07
37	7 C	1,900 	7,700	70,40T	0.10	6/./07	/1.0/1	66.00	00:1	17.71	16.00
300	0	;	1	-	}	}	į	1	9	1	!
39	0	!	1	-	1	!	1	1	1	ţ	1
40	0				!		1	1	j	1	!
41	2	2,700	2,490	7,208	2,89	314.86	236.03	74.96	1.60	20.65	56.58
42	П	1,430	1,290	3,970	3.08	198.68	129.59	65.22	1.93	5.31	61.85
43	٦	1,480	1,330	4,086	3.07	187.91	131.77	70.12	99.	49.4	50.84
77	0	1	ì	!	ŀ	-	1	1	1	1	!
45	0 ,	1 6	1 6	1 6	1 (	1 :	1 0	1 0	1 0	1 0	1 0
46	⊣ -	1,690	1,520	4,129	2.72	241.27	136.38	56.53	3.14	10.85	90.90
8 7	10	7,040	3 -	0/76	7 1	17.007	100.70	2	2 1	1	1 1
Total or	94	26,190	23,530	65,273	2.77	3,593,45	2,145.65	59.71	41.21	284.03	1,122.56

Table 6.—Log scale, veneer tally, and cubic volumes by scaling diameter, grade 2 red and white fir logs

ı	ا به ا		9	0	9	0	7	Š	2	4	Ħ	9	4	7		6	7	2	7	5	7	5	-	4	6	7	!	3	00	0	4	0	1	5	!	7	0	4
	Residue	1 1 1	6.56	13.50	8.86	24.90	6.77	7,05	45.92	50.24	50.0	38.5	53.8	71.1	19.11	38.49	19.62	24.8	54.87	39.2	60.22	57.25	165.51	76.64	126.19	132.07	,	21.93	83.08	58.2	121.24	220.80	'	232.45	ı	150.24	104.90	2,184.24
	Core	Cubic feet	13.62	13.92	7.80	16.86	3.84	3,96	25.89	20,11	19.80	16.17	16.48	15.73	3.96	15.42	8.55	18.37	19.65	28.82	22.87	13,31	40.89	18.72	26.99	19.92	1	7.24	16.02	6.64	21.53	40.86	1	37.97	1	23.76	22.51	591,48
	Below grade veneer		0.51	.35	.25	1.78	.16	.21	1,25	1.27	3.90	.47	.2,77	5.18	.70	2.05	1.46	1.57	6.52	2.99	2.08	.87	12.56	69.4	6.63	2.44	-	69°	3.03	1.33	3.18	2.86	1	15.05	1	9.79	2.05	100.64
Volume	Veneer	Percent	23.85	37.96	42.25	36.49	48.12	44.56	51.87	49.87	52.48	61.25	52.85	46.59	55.06	72.12	72.44	63.43	39,35	65.56	55.14	58.41	54.08	63.35	47.71	54.25	1	74.07	59.74	53.12	65.64	98.64	1	56.50	1	50.03	38.38	55.14
	Veneer	feet	6.48	16.99	12.37	25.02	66.6	9.02	78.75	71.25	81.40	87.26	81.94	80.29	29.12	144.76	77.90	77.68	52.58	135.25	104.68	100.33	257.87	172.96	145.79	183.10	1	85.30	151.55	78.70	278.77	263.06	;	370.79	1	184.02	80.63	3,535.60
	Log	Cubic f	27.17	44.76	29.28	68.56	20.76	20.24	151.81	142.87	155.11	142.46	155.03	172.32	52.89	200.72	107.53	122.47	133.62	206.31	189.85	171.76	476.83	273.01	305.60	337.53	1	115.16	253.68	148.17	424.72	527.58	1	656.26	1	367.81	210.09	6,411.96
tally	Recovery	,	1.77	2,33	2.70	2.45	3.03	2.29	2.74	2.62	2.40	2.92	2.54	2.19	2.83	3.22	3.09	2.76	1.98	2.92	2.47	2.75	2.86	2.87	2.56	2.83	1	3,45	2.78	2.62	2.95	2.82	!	2.34	1	2.18	3,43	2.68
Veneer	Volume, 3/8-inch basis	Square feet	195	513	378	760	303	275	2,386		2,470	2,655	2,485	2,432	878	4,411	2,383	2,376	1,587	4,122	3,163	3,078	7,863	5,229	4,403	5,542	1	2,585	4,639	2,441	8,446	7,971	1	11,234	!	5,577	2,437	107,392
	Net	feet - S	110	220	140	310	100	120	870	830	1,030	910	980	1,110	310	1,370	770	860	800	1,410	1,280	1,120	2,750	1,820	1,720	1,960	}	750	1,670	930	2,860	2,830	1	4,810	!	2,560	710	40,020
Scale	Gross	- Board	120	220	140	320	100	120	006	850	1,100	910	1,000	1,200	320	1,400	800	860	980	1,590	1,740	1,240	3,200	2,100	2,250	2,340	-	820	1,860	980	3,270	4,040	1	5,120	1	2,860	1,480	46,260
Number	of logs		~	) ("	, c	1 7		٠.	1 9	Z,	5	4	4	4	1	7	2	2	2	3	Ę	2	5	ů	Э	Ü	0	1	2	=	٣	٣	0	7	0	2	-	92
Log	scaling diameter (inches)		σ	10	11	12	13	14	15	16	1.7	18	19	20	21	22	23	24	25	26	2.7	28	29	30	31	32	33	34	35	36	37	38	39	07	41	42	43	Total or

Table 7.—Log scale, veneer tally, and cubic volumes by scaling diameter, grade 3 red and white fir logs

Log	Number	Scale	ıle	Veneer	tally			Volume	āï		
scaling diameter (inches)	of logs	Gross	Net	Volume, 3/8-inch basis	Recovery	Log	Veneer	Veneer	Below grade veneer	Core	Residue
		- Board	Board feet -	Square feet		Cubic	Cubic feet	Percent		Cubic feet	1 1 1
7		30	30	Н	0.03	7.64	0.05	0.65	0	0	7.59
00	9	250	190	366	1.93	57.82	12.14	21.00	.63	23.05	22.00
6	22	1,220	1,210	2,655	2.19	275.46	87.65	31.82	2.66	97.17	87.98
10	28	2,220	2,150	4,876	2.27	446.12	160.74	36.03	3.17	141.81	140.40
11	14	1,100	1,080	2,882	2.67	222.23	94.98	42.74	3.47	62.24	61.54
12	15	1,480	1,480	4,150	2.80	287.92	136.02	47.24	3.57	71.51	76.82
13	1.5	1,490	1,460	3,942	2.70	271.87	129,48	47.63	1.97	96.99	73.86
14	6	1,080	1,080	3,184	2.95	195.20	104.85	53.71	2.26	41.63	94°94
1.5	1.2	1,800	1,750	4,817	2.75	309.40	157.60	50.94	2.88	65.54	83.38
16	14	2,650	2,640	7,773	2.94	422.21	255.02	05.09	7.26	58.80	101.13
17	9	1,200	1,180	3,361	2.85	188.54	110.89	58.82	5.35	24.13	48.17
1.8	00	1,830	1,830	4,743	2.59	271.39	156.14	57.53	2.69	42.96	09.69
19	9	1,500	1,480	4,389	2.97	228.81	143.72	62.81	.53	30.21	54.35
20	7	2,100	2,100	5,363	2.55	301,24	176.04	58.44	3,33	27.42	94.45
21	7	1,280	1,230	3,416	2.78	179.45	111.35	62.05	.84	22.24	45.02
22	80	2,620	2,540	7,328	2.89	363.93	239.93	65.93	5.05	35.09	83.86
23	7	3,080	2,920	7,585	2.60	416.98	249.89	59.93	11.74	41.77	113.58
24	П	430	430	1,199	2.79	59.11	39.69	67.15	1.08	3.78	14.56
25	9	2,940	2,490	6,251	2,51	394.28	205.18	52.04	15.92	57.33	115.85
26	2	1,060	870	2,836	3.26	141.41	92.91	65.70	4.31	14.87	29.32
27	٣	1,740	1,690	4,545	2.69	214.57	147.42	68.70	3,83	12.96	50.36
28	٦	620	510	1,916	3.76	93.54	61.72	65.98	1.59	5.40	24.83
29	3	1,920	1,720	5,517	3.21	255.57	179.41	70.20	1.96	20.25	53.95
30	0		1	1	į	!	ļ	1	!	!	1
31	0	1	1	1	;	!	1	!	!	!	1
32	0	1	1		1	}	1	1		!	!
33	0	1	i	1	!	;	!	1	;	!	1
34	2	1,700	1,570	3,526	2.25	218.79	116.45	53.22	4.10	10.04	88.20
Total or average	200	37,340	35,630	96,621	2.71	5,823.48	3,169.27	54.42	90.19	976.76	1,587.26

Table 8.—Log scale, veneer tally, and cubic volumes by scaling diameter, grade 4 red and white fir logs

	1																		_		_		_			_			_							_					
	Residue	1	6.52	22,31	12.12	21 15	42.54	87.91	10.40 60.60	46 34	111 15	62.66	118,11	118.45	102,12	118.93	60.13	94.54	154.03	125.62	213,80	79.08	304.90	43.77	59.78	202.80	173.01	33.41	70.87	190.38	119.49	77.63	38.12	46.38	1	75.14	53.02	ł	99.79	3 152 04	10.101.0
	Core	Cubic feet	3.90	22.08	22.93	07.70	74.20	12.01	13.14	20.24	51.63	35.69	45.76	45.33	39,75	64.58	13.68	33.49	42.87	34.03	38,30	17.78	65.11	5.76	21.48	45.27	32.76	10.85	20.92	35,14	21.56	9.21	10.51	4.02	!	8.99	9.18	B	12.28	982.32	304.00
ше	Below grade veneer	1	0	63	0	10	0T.	90.	90°	2,00	6 21	77.0	6.47	2,82	06.9	6.87	1.36	2,44	6.17	5.14	16.38	1.77	24.46	2.28	4.33	11.75	14.72	8.88	4.75	22.32	30.72	96°	5.04	.85		2.56	1.41	1	6.33	217 43	01.17
Volume	Veneer	Percent	18.28	22.46	11.00	01 30	27. L9	11.00	27. 36	50.05	72.07	40.26	55.48	51,37	46.94	39.94	62.29	57.44	56.27	57.72	54.96	57.80	58.98	62.51	52.90	46.14	19.09	55.10	61.90	51.83	55.36	42.21	64.25	94.99	ł	53.18	63,18	ł.	57.11	52.80	74.00
	Veneer	feet	2.33	13.04	4.33	15 22	30 30	70,00	3,8/	30.0T	131 56	68 99	212.29	175.96	121,44	126,63	124.16	176.08	261.28	225.00	327.59	135.12	567.14	86,39	96.15	222.60	339.29	65.20	156.81	566.69	212,98	64.12	24.96	101.57	1	98.48	109.16	1	114.89	4 867 35	4,000,00
	Log	Cubic	12.75	58.06	39.38	90 09	126 33	120.03	33.33	154.26	300 55	171 36	382,63	342.56	270.21	317.01	199.33	306,55	464.35	389.79	596.07	233.75	961.61	138.20	181.74	482.42	559.78	118.34	253,35	514.53	384.75	151.92	150.14	152.82	1	185.17	172,77	1	201.16	4 219 14	7,547,44
tally	Recovery		1.80	88	1,00		1.33	1.04	1.7	2 75	2.73	2 45	2.82	2.36	2.21	2,27	2.59	2.55	2.30	2.55	2,36	2,31	2.53	2.64	2.11	2.07	2.61	2.53	2.70	2.28	2.14	1.80	2.84	2.45	1	2.21	2.46	;	2.34	75 6	2.30
Veneer	Volume, 3/8-inch basis	Square feet	72	395	136	777	404	116	1 120	1,130	3 979	2,000	6-441	5,340	3,669	3,852	3,755	5,323	7,914	6,805	9,905	4,130	17,173	2,611	2,909	6,789	10,276	2,021	4,754	8,100	6,502	1,944	2,922	3,066	1	2,979	3,302	1	3,484	147 622	770,141
1e	Net	feet -	70	210	210	2 6	300	00/	120	02/	000	1,020 860	2.280	2,260	1,660	1,700	1,450	2,090	3,440	2,670	4,200	1,790	6,790	066	1,380	3,280	3,940	800	1,760	3,550	3,040	1,080	1,030	1,250	!	1,350	1,340		1,490	62 470	0/1,0
Scale	Gross	- Board	07	230	210	0	310	2 0 0	180	010	1 890	1,030	2,420	2,330	1,840	2,100	1,530	2,150	3,550	3,000	4,540	1,860	7,380	1,030	1,500	3,660	4,150	850	1,860	3,920	3,270	1,130	1,190	1,280	-	1,430	1,480	-	1,610	038 29	0000,10
Number	of logs		-	1 (*	, 0	ŧμ	0 1	٠ ,	7 -	~ ц	n a	νц	n 00	7	. 17	9	. 7	5	7	5	9	3	10	2	2	4	5	1	2	4	e	1	H	-1	0	1	1	0	П	141	1
Log	scaling diameter (inches)		6	, (	1 5	+ c	1.2	7,7	1.4	15	17	/T	10	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	77	45	Total or	average

Table 9.—Log scale, veneer tally, and cubic volumes by scaling diameter, all grades, red and white fir logs

Log	Number		Scale	Veneer	tally			Volume	пте		
scaling diameter (inches)	of logs	Gross	Net	Volume, 3/8-inch basis	Recovery	Log	Veneer	Veneer	Below grade veneer	Core	Residue
		- Board	feet -	Square feet	اب	Cubic	feet	Percent	1	Cubic feet	! ! !
7	-	30	30	-	0.03	7.64	0.05	0.65	0	0	7.59
. ∞	9	250	190	366	1.93	57.82	12.14	21.00	.63	23.05	22.00
6	26	1,380	1,360	2,922	2.15	315.38	96.46	30.58	3.17	114.69	101.06
10	34	2,670	2,580	5,784	2.24	548.94	190.77	34.75	4.15	177.81	176.21
11	19	1,520	1,500	3,506	2.34	304.41	115,33	37.89	3.81	96.93	88.34
12	24	2,110	2,090	5,374	2.57	417.34	176.37	42.26	5.53	112.57	122.87
13	29	2,930	2,830	6,456	2.28	540.13	212.34	39.31	9.53	150.45	167.81
14	14 26	1,620	1,560	4,13/ 0 702	2.65	291.54	136.42	46./9	3.16	127 20	85.13
CT 91	97	3,000	7,490	12 283	2 3 2	719 34	403 48	56.09	10.62	107.73	197.71
17	22	4,590	4,390	10,763	2.45	708.19	355,43	50.19	16.52	110.82	225.42
18	20	4,470	4,260	11,325	2.66	94.689	372.11	53.97	9.59	108.04	199.72
19	19	5,170	4,960	14,044	2.83	809.67	462.08	57.07	9.92	96.29	241.38
20	20	6,230	6,070	14,598	2.40	904.02	479.74	53.07	12.20	96.85	315.23
21	11	3,760	3,510	8,915	2.54	549.24	293.29	53.40	8.57	69.85	177.53
22	18	6,120	5,610	15,591	2.78	881,66	511.32	58.00	13.97	115.09	241,28
23	16	6,610	6,260	16,802	2,68	895,65	552.83	61.72	15.38	76.20	251.24
24	00 (	3,440	3,380	8,898	2.63	488.13	293.45	60.12	5.09	55.64	133,95
25	20	9,920	8,900	20,996	2.36	1,331.74	691.71	51.94	32.84	164.70	442.49
26	11	6,180	5,440	15,278	2.81	816.44	503.12	61.62	12.88	81.62	218.82
27	13	8,600	7,/00	19,1/2	2.49	1,0/1.15	631.30 355.00	58.94	22.61 5 7.7	60.87	339.L5
29	18	12,500	11,260	30,553	2.71	1.694.01	1.004.42	59.29	38.98	126.25	524.36
30	10	3,130	2,810	7,840	2.79	411.21	259.35	63.07	6.97	24.48	120.41
31	6	6,750	5,530	13,187	2.38	924.61	434.98	47.04	22.32	77.85	389.46
32	00	6,780	5,910	14,542	2.46	917.65	478.85	52.18	15.15	68.91	354.74
33	9	4,980	7,690	12,368	2.64	665.48	408.56	61.39	15.31	40.34	201.27
34	ν.	4,250	3,890	10,324	2.65	560.74	339.26	60.50	16.25	33.84	171.39
35	ın ı	4,650	4,260	11,851	2.78	636.58	389.42	61.17	9.30	40.84	197.02
36	_	6,860	6,180	15,942	2.58	930.49	523.56	56.27	24.65	64.79	317.49
3/	0 -	6,540	5,900	14,948	2.53	809.47	491./5	60.75	33.90	43.09	240.73
30	7 -	0,1,0	3,910	9,915	2.54	150 37	37.77	48.LD	3.82	10.07	290.43
7.0	-1 14	1,190	T,030	17, 200	75.0	170.14 000	74.05	04.40	15 90	71.07	278 83
247	, ,	2,400	000,0	7 208	2 89	314.86	236.03	96.96	1.60	20.65	56.58
42	2 7	5.720	5,200	12.526	2.41	751.66	412.09	54.82	14.28	38.06	287,23
43	· ~	075.7	3,380	9.825	2.91	570.77	321.56	56,34	4.12	36.33	208.76
77	0		1	-	1	1	1	1	1	ì	!
45	-1	1,610	1,490	3,484	2.34	201.16	114.89	57.11	6.33	12.28	99.79
97	-	1,690	1,520	4,129	2.72	241.27	136.38	56.53	3.14	10.85	90.90
47	0	1	-	1	1 :	}	1	1 3	13	1 .	1 0
87	1	1,840	1,730	4,178	2.42	203.21	137.90	67.86	.16	12.43	52.72
Total or	619	-177,150	161,650	416,908	2.59	25,048.03	13,717.87	54.77	449.47	2,834.59	8,046.10

Table 10.—Veneer grade recovery by scaling diameter, log grade 1, red and white fir

Log scaling	Number of	Veneer volume,			7	eneer grade			
diameter (inches)	logs	3/8-inch basis	A	A patch	В	B patch	С	C plug	D
		Square feet				- Percent -			
11	1	110	0	0	0	0	50.9	0	49.1
12	0								
13	6	1,288	0	0	0	0	70.4	4.4	25.2
14	2	562	0	0	0	0	82.2	0	17.8
15	1	449	0	0	0	0	78.8	2.7	18.5
16	0			60.00					
17	2	953	0	0	. 2	0	82.3	8.7	8.8
18	3	1,821	0	0	0	0	76.6	7.9	15.5
19	1	729	0	0	0	0	96.3	1.4	2.3
20	2	1,463	0	0	0	0	84.7	7.6	7.7
21	1	952	0	0	0	0	51.2	47.1	1.7
22	0		~~~						
23	3	3,079	0	0	0	0	79.2	7.7	13.1
24	0								
25	5	5,244	0	0	0	.7	72.1	8.4	18.8
26	ĩ	1,515	Õ	Ő	Ö	0 ,	56.2	15.7	28.1
27	ī	1,559	ő	Ö	.7	Ö	57.0	39.4	2.9
28	1	1,749	ő	0	0	Õ	54.4	43.4	2.2
29	Ō	2,745					J7.7	73.7	2.2
30	ő								
31	4	5,875	0	0	.1	0	62.0	5.0	32.9
32	i	2,211	0	0	3.0	0	19.4	50.4	27.2
33	i	2,092	0	0	4.1	0	58.9	31.2	5.8
34	1	2,192	0	0	0	0	12.4	15.2	72.4
35	1	2,458	0	0	0	1.5	44.6	27.4	26.5
36	2	5,401	0	0	0			38.9	
37	0	5,401		U	_	3.3	37.4		20.4
38	0								
38 39	0								
40	0	7 200							
41	2	7,208	0	0	.2	4.1	63.3	12.0	20.4
42	1	3,970	0	0	0	0	68.4	13.6	18.0
43	1	4,086	0	0	0	0	97.2	0	2.8
44	0								
45	0								
46	1	4,129	0	0	0	0	25.6	28.4	46.0
47	0								
48	1	4,178	0	0	0	3.1	55.6	21.6	19.7
Total or average	46	65,273	0	0	.3	1.0	59.2	18.1	21.4

Table 11.—Veneer grade recovery by scaling diameter, log grade 2, red and white fir

Log scaling	Number	Veneer volume,				Veneer grade	e		
diameter (inches)	logs	3/8-inch basis	A	A patch	В	B patch	С	C plug	D
		Square feet				- Percent -			
9	3	195	0	0	0	0	40.5	0	59.5
10	3	513	0	0	0	0	49.5	11.7	38.8
11	2	378	0	0	0	0	83.6	0	16.4
12	4	760	0	0	0	0	70.1	0	29.9
13	1	303	0	0	0	0	73.6	0	26.4
14	1	275	0	0	0	0	83.3	0	16.7
15	6	2,386	0	0	0	0	83.1	0	16.9
16	5	2,175	0	0	0	0	63.0	1.4	35.6
17	5	2,470	0	0	0	0	78.7	0	21.3
18	4	2,655	0	0	0	0	73.5	1.4	25.1
19	4	2,485	0	0	0	0	29.1	18.8	52.1
20	4	2,432	0	0	0	0	47.1	7.9	45.0
21	1	878	0	0	0	0	55.0	.8	44.2
22	4	4,411	Ō	0	0	0	56.9	8.8	34.3
23	2	2,383	0	0	1.3	0	69.6	17.7	11.4
24	2	2,376	0	0	0	Ō	77.5	8.0	14.5
25	2	1,587	Õ	Ö	Ö	0	36.1	40.8	23.1
26	3	4,122	0	0	0	0	10.6	17.2	72.2
27	3	3,163	0	0	.3	ő	58.4	17.7	23.6
28	2	3,078	0	ő	0	0	41.2	2.4	56.4
29	5	7,863	0	0	(1/)	0	65.0	3.6	31.4
30	3	5,229	0	0	$\left(\frac{1}{0}\right)$	0	27.5	32.2	40.3
31	3	4,403	0	0	0	0	36.9	12.1	51.0
32	3	5,542	0	0	0	.9	50.6	24.4	24.1
33	0	J, J42			U	• 7			24.1
34	1	2,585	0	0	0	0	5.9	17.1	77.0
35	2	4,639	0	0	0	0	37.8	18.5	43.7
36	1	2,441	0	0	0	0	95.7	0	4.3
37	3	8,446	0	0	(1/)	0	38.5	30.1	31.4
38	3	7,971	0	0	$\left(\frac{1}{2}\right)$	0	26.3	24.5	49.2
39	0	7,571				0	20.5	24.3	47.2
40	4	11,234	0	0	0	0	36.6	10.8	52.6
41	0	11,234						10.0	J2.0
42	2	5,577	0	0	0	0	38.9	32.9	28.2
42	1	2,437	0	0	.1	0	64.5	27.9	7.5
43		2,43/	· · · · · · · · · · · · · · · · · · ·		• 1	U	64.3	41.9	1.5
Total or average	92	107,392	0	0	( <u>1</u> /)	(1/)	46.4	16.0	37.6

 $<sup>\</sup>frac{1}{}$  Less than 0.05 percent.

Table 12.—Veneer grade recovery by scaling diameter, log grade 3, red and white fir

Log scaling	Number of	Veneer volume,				Veneer grad	e		
diameter (inches)	logs	3/8-inch basis	A	A patch	В	B patch	С	C plug	D
		Square feet				· Percent - ·			
7	1	1	0	0	0	0	100.0	0	0
8	6	366	0	0	0	0	58.4	3.3	38.3
9	22	2,655	0	0	(1/)	0	62.6	1.6	35.8
10	28	4,876	0	0	0	0	54.9	1.0	44.1
11	14	2,882	0	0	0	0	59.2	2.0	38.8
12	15	4,150	0	0	0	0	66.1	0	33.9
13	15	3,942	0	0	0	0	70.2	1.0	28.8
14	9	3,184	0	0	(1/)	0	78.8	.8	20.4
15	12	4,817	0	0	ō	0	67.8	1.0	31.2
16	14	7,773	0	0	0	0	69.4	.5	30.1
17	6	3,361	0	0	0	0	41.8	7.9	50.3
18	8	4,743	.3	0	0	0	65.4	2.9	31.4
19	6	4,389	0	0	0	0	58.6	5.7	35.7
20	7	5,363	0	0	0	0	69.9	.6	29.5
21	4	3,416	0	0	0	0	79.4	8.6	12.0
22	8	7,328	0	0	0	0	62.8	9.3	27.9
23	7	7,585	0	0	0	0	28.7	12.1	59.2
24	1	1,199	0	0	.2	0	23.4	0	76.4
25	6	6,251	0	0	0	0	36.2	26.0	37.8
26	2	2,836	0	0	0	0	29.1	13.3	57.6
27	3	4,545	0	0	0	0	80.5	0	19.5
28	1	1,916	0	0	0	0	30.9	0	69.1
29	3	5,517	0	0	0	0	55.4	1.4	43.2
30	0								
31	0								
32	. 0	~~							
33	0							***	
34	2	3,526	0	0	0	0	17.3	8.7	74.0
Total or average	200	96,621	( <u>1</u> /)	0	(1/)	0	56.4	5.5	38.1

 $<sup>\</sup>frac{1}{}$  Less than 0.05 percent.

Table 13.—Veneer grade recovery by scaling diameter, log grade 4, red and white fir

	Log scaling	Number	Veneer volume,				Veneer grade	9		
9 1 72 0 0 0 0 18.1 13.9 6. 10 3 395 0 0 0 0 0 35.2 0 6. 11 2 136 0 0 0 0 0 0 11.2 0 8. 12 5 464 0 0 0 0 0 0 11.2 0 8. 13 7 923 0 0 0 0 0 0 13.3 0 0 8. 14 2 116 0 0 0 0 0 0 24.0 1.1 7. 16 5 2,335 0 0 0 0 0 0 24.0 1.1 7. 16 5 2,335 0 0 0 0 0 0 8.8 0 9. 17 9 3,979 0 0 0 0 0 8.8 0 9. 18 5 2,106 0 0 0 0 0 18.4 .3 19 8 6,441 0 0 0 0 0 0 18.4 .3 19 8 6,441 0 0 0 0 0 7.2 2.8 8. 20 7 5,340 0 0 0 0 0 17.2 2.8 8. 21 5 3,669 0 0 0 .1 0 14.9 .3 22 6 3,852 0 0 0 0 0 11.6 1.6 8. 23 4 3,755 0 0 0 0 0 12.2 2.9 8. 24 5 5,223 0 0 0 0 0 12.2 2.9 8. 25 7 7,914 0 0 0 0 0 12.2 2.9 8. 26 5 6,805 0 0 0 0 0 13.4 3.2 8. 27 6 9,905 0 0 0 0 0 13.4 3.2 8. 28 3 4,130 0 0 0 0 0 0 13.4 3.2 8. 28 3 4,130 0 0 0 0 0 0 0 13.4 3.2 8. 29 10 17,173 0 0 0 0 0 0 13.4 3.2 8. 29 10 17,173 0 0 0 0 0 0 0 4.9 8.6 8.1 8. 30 2 2,611 0 0 0 0 0 0 0 0 0 0 1.1 6. 31 2 2,909 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	diameter		3/8-inch	A	A patch	В	B patch	С	C plug	D
10			Square feet				Percent -			
10	9	1	72	0	0	0	0	18.1	13.9	68.0
11       2       136       0       0       0       0       56.6       0       4         12       5       464       0       0       0       0       11.2       0       8         13       7       923       0       0       0       0       11.3       0       8         14       2       116       0       0       0       0       6.9       4.3       8         15       7       1,130       0       0       0       0       24.0       1.1       7         16       5       2,335       0       0       0       0       6.2       0       9         17       9       3,979       0       0       0       6.2       0       9         18       5       2,106       0       0       0       18.4       .3       8         20       7       5,340       0       0       0       17.2       2.8       8         21       5       3,669       0       0       .1       0       14.9       .3       8         22       6       3,852       0       0       0	-		395	0	0	0	0	35.2	0	64.8
12			136	0	0	0	0	56.6	0	43.4
13			464	0	0	0	0	11.2	0	88.8
14         2         116         0         0         0         0         6.9         4.3         8           15         7         1,130         0         0         0         0         24.0         1.1         7           16         5         2,335         0         0         0         0         8.8         0         9           17         9         3,979         0         0         0         0         6.2         0         9           18         5         2,106         0         0         0         0         17.2         2.8         8           20         7         5,340         0         0         0         17.2         2.8         8           20         7         5,340         0         0         0         11.6         1.4         .3         3           21         5         3,669         0         0         0         11.6         1.6         8           23         4         3,755         0         0         0         11.6         1.6         8           23         4         3,755         0         0         0 <t< td=""><td></td><td></td><td>923</td><td>0</td><td>0</td><td>0</td><td>0</td><td>13.3</td><td>0</td><td>86.7</td></t<>			923	0	0	0	0	13.3	0	86.7
1.5         7         1,130         0         0         0         0         24.0         1.1         7           16         5         2,335         0         0         0         0         8.8         0         9           17         9         3,979         0         0         0         0         6.2         0         9           18         5         2,106         0         0         0         0         18.4         .3         8           19         8         6,441         0         0         0         0         17.2         2.8         8           20         7         5,340         0         0         0         0         7.2         3.4         8           21         5         3,669         0         0         0         11.6         1.6         8           22         6         3,852         0         0         0         11.6         1.6         8           23         4         3,755         0         0         0         0         12.2         2.9         8           24         5         5,323         0         0         <				0	0	0	0	6.9	4.3	88.8
16       5       2,335       0       0       0       0       8.8       0       9         17       9       3,979       0       0       0       0       6.2       0       9         18       5       2,106       0       0       0       0       18.4       .3       8         19       8       6,441       0       0       0       0       17.2       2.8       8         20       7       5,340       0       0       0       14.9       .3       8         21       5       3,669       0       0       11.0       14.9       .3       8         22       6       3,852       0       0       0       0       11.6       1.6       8         23       4       3,755       0       0       0       0       12.2       2.9       9         25       7       7,914       0       0       0       0       13.4       3.2       8         26       5       6,805       0       0       0       0       9.4       1.0       8         28       3       4,130       0			1.130	0	0	0	0	24.0	1.1	74.9
17       9       3,979       0       0       0       0       6.42       0       9         18       5       2,106       0       0       0       0       18.4       .3       8         19       8       6,441       0       0       0       0       17.2       2.8       8         20       7       5,340       0       0       0       0       7.2       3.4       8         21       5       3,669       0       0       .1       0       14.9       .3       8         22       6       3,852       0       0       0       0       11.6       1.6       8         23       4       3,755       0       0       0       0       11.6       1.6       8         24       5       5,323       0       0       0       0       6.0       2.4       9         25       7       7,914       0       0       0       0       9.4       1.0       8         26       5       6,805       0       0       0       0       37.0       .2       6         28       3       <					0	0	0	8.8	0	91.2
18       5       2,106       0       0       0       0       18.4       .3       8         19       8       6,441       0       0       0       0       17.2       2.8       8         20       7       5,340       0       0       0       0       7.2       3.4       8         21       5       3,669       0       0       0       11.6       1.6       8         22       6       3,852       0       0       0       0       11.6       1.6       8         23       4       3,755       0       0       0       0       12.2       2.9       8         24       5       5,323       0       0       0       0       6.0       2.4       9         25       7       7,914       0       0       0       0       9.4       1.0       8         26       5       6,805       0       0       0       0       13.4       3.2       8         28       3       4,130       0       0       0       0       37.0       .2       6         29       10       17,173				0	0	0	0	6.2	0	93.8
19							0		.3	81.3
20       7       5,340       0       0       0       7.2       3.4       8         21       5       3,669       0       0       .1       0       14.9       .3       8         22       6       3,852       0       0       0       0       11.6       1.6       8         23       4       3,755       0       0       0       0       11.6       1.6       8         24       5       5,323       0       0       0       0       6.0       2.4       9         25       7       7,914       0       0       0       0       9.4       1.0       8         26       5       6,805       0       0       0       0       13.4       3.2       8         28       3       4,130       0       0       0       0       37.0       .2       6         29       10       17,173       0       0       (1/)       0       10.6       6.1       8         30       2       2,611       0       0       0       0       10.1       1.6       8         31       2       2,909<				-	0	0	0	17.2	2.8	80.0
21							0		3.4	89.4
22 6 3,852 0 0 0 0 0 11.6 1.6 8 23 4 3,755 0 0 0 0 0 0 12.2 2.9 8 24 5 5,323 0 0 0 0 0 0 0 2.4 9 25 7 7,914 0 0 0 0 0 0 13.4 3.2 8 26 5 6,805 0 0 0 0 0 0 13.4 3.2 8 27 6 9,905 0 0 0 0 0 0 37.0 .2 6 28 3 4,130 0 0 0 0 0 0 37.0 .2 6 29 10 17,173 0 0 0 (1/) 0 10.6 6.1 8 30 2 2,611 0 0 0 0 0 10.1 1.6 8 31 2 2,909 0 0 0 0 0 0 10.1 1.6 8 31 2 2,909 0 0 0 0 0 0 8.0 .2 9 33 5 10,276 0 0 0 0 0 0 4.9 8.6 8 34 1 2,021 0 0 0 0 0 4.7 0 9 35 2 4,754 0 0 0 0 0 4.7 0 9 35 2 4,754 0 0 0 0 0 0 4.7 0 9 35 3 4,100 0 0 0 0 0 0 4.9 8.6 8 36 4 8,100 0 0 0 0 0 0 4.9 8.6 8 36 4 8,100 0 0 0 0 0 0 4.9 2.8 9 38 1 1,944 0 0 0 0 0 0 4.9 2.8 9 39 1 2,922 0 0 0 0 0 0 4.9 2.8 9 39 1 2,922 0 0 0 0 0 0 0 4.9 2.8 9 39 1 2,922 0 0 0 0 0 0 0 2.8 9.0 8 41 0					-	. 1	_		. 3	84.7
23							_		1.6	86.8
24				-	-		_			84.9
25					-	-				91.6
26					-					89.6
27 6 9,905 0 0 0 0 37.0 .2 6 28 3 4,130 0 0 0 0 10.6 6.1 8 30 2 2,611 0 0 0 0 0 10.1 1.6 8 31 2 2,909 0 0 0 0 0 6.3 8.1 8 32 4 6,789 0 0 0 0 0 8.0 .2 9 33 5 10,276 0 0 0 0 4.9 8.6 8 34 1 2,021 0 0 0 0 4.7 0 9 35 2 4,754 0 0 0 0 0 4.7 0 9 35 2 4,754 0 0 0 0 0 30.9 11.6 5 36 4 8,100 0 0 0 1.0 0 30.9 11.6 5 37 3 6,502 0 0 0 0 0 4.9 2.8 9 38 1 1,944 0 0 0 0 0 0 4.9 2.8 9 38 1 1,944 0 0 0 0 0 0 6.6 0 9 39 1 2,922 0 0 0 0 0 0 6.6 0 9 40 1 3,066 0 0 0 0 0 0 2.8 9.0 8 41 0										83.4
28				-	_		-			83.9
29							_			62.8
30       2       2,611       0       0       0       10.1       1.6       8         31       2       2,909       0       0       0       0       6.3       8.1       8         32       4       6,789       0       0       0       0       8.0       .2       9         33       5       10,276       0       0       0       0       4.9       8.6       8         34       1       2,021       0       0       0       0       4.7       0       9         35       2       4,754       0       0       0       0       7.0       4.5       8         36       4       8,100       0       0       0       0       7.0       4.5       8         36       4       8,100       0       0       0       0       30.9       11.6       5         37       3       6,502       0       0       0       0       4.9       2.8       9         38       1       1,944       0       0       0       0       6.6       0       9         39       1       2,922       <			4,130	-		_	_			83.3
31										88.3
31				-	_	-				85.6
33			,							91.8
34				_			_			86.5
35										95.3
36				_		-	-		_	88.5
37						-	-			56.5
38			,	-	-		-			92.3
39 1 2,922 0 0 0 0 9.7 5.6 8 40 1 3,066 0 0 0 0 0 2.8 9.0 8 41 0 42 1 2,979 0 0 0 0 0 1.6 0 9 43 1 3,302 0 0 0 0 9.4 37.0 5 44 0 45 1 3,484 0 0 0 0 0 30.0 18.8 5					-					93.4
40 1 3,066 0 0 0 0 2.8 9.0 8 41 0 42 1 2,979 0 0 0 0 0 1.6 0 9 43 1 3,302 0 0 0 0 9.4 37.0 5 44 0 45 1 3,484 0 0 0 0 0 30.0 18.8 5			,	_					_	84.7
40 41 0  42 1 2,979 0 0 0 0 0 1.6 0 9 43 1 3,302 0 0 0 0 0 0 0 9 44 0         				-						88.2
41 42 1 2,979 0 0 0 0 1.6 0 9 43 1 3,302 0 0 0 0 9.4 37.0 5 44 0			3,066	-	=	0	_			00.2
42 43 1 3,302 0 0 0 0 9.4 37.0 5 44 0										
44 0					-					98.4
45 1 3,484 0 0 0 0 30.0 18.8 5			3,302	-	-	0	_			53.6
45 1 5,404 0										
Total or 1/1 1/7 622 0 0 1 0 11 8 5.1 8	45	1	3,484	0	0	0	0	30.0	18.8	51.2
141 147.022 0 0 .1 0 11.0 5.1	Total or	141	147,622	0	0	.1	0	11.8	5.1	83.0

 $<sup>\</sup>frac{1}{}$  Less than 0.05 percent.

Table 14.—Veneer grade recovery by scaling diameter, all grades, red and white fir logs

Log scaling	Number	Veneer volume,				Veneer grade	2		
diameter (inches)	logs	3/8-inch basis	A	A patch	В	B patch	С	C plug	D
		Square feet				Percent -			
7	1	1	0	0	0	0	100.0	0	0
8	6	366	0	0	0	0	58.4	3.3	38.3
9	26	2,922	0	0	(1/)	0	60.0	1.8	38.2
10	34	5,784	0	Ō	0	Ō	53.1	1.9	45.0
11	19	3,506	0	0	0	0	61.3	1.7	37.0
12	24	5,374	0	0	0	0	61.9	0	38.1
13	29	6,456	0	0	0	0	62.2	1.5	36.3
14	14	4,137	0	0	( <u>1</u> /)	0	77.5	.7	21.8
15	26	8,782	0	0	0	0	66.9	.8	32.3
16	24	12,283	0	0	0	0	56.8	.5	42.7
17	22	10,763	0	0	(1/)	0	40.6	3.2	56.2
18	20	11,325	.1	0	0	0	60.5	2.8	36.6
19	19	14,044	0	0	0	0	36.4	6.4	57.2
20	20	14,598	0	0	0	0	44.7	3.6	51.7
21	11	8,915	0	0	(1/)	0	47.6	8.5	43.9
22	18	15,591	0	0	0	0	48.5	7.2	44.3
23	16	16,802	0	0	. 2	0	40.1	10.0	49.7
24	8	8,898	0	0	(1/)	0	27.4	3.6	69.0
25	20	20,996	0	0	0	.2	35.1	13.3	51.4
26	11	15,278	0	0	0	0	19.8	10.1	70.1
27	13	19,172	0	0	.1	0	38.2	9.6	52.1
28	7	10,873	0	0	0	0	39.9	7.8	52.3
29	18	30,553	0	0	(1/)	0	32.7	4.6	62.7
30	5	7,840	0	0	ō	0	21.7	22.0	56.3
31	9	13,187	0	0	(1/)	0	41.3	8.0	50.7
32	8	14,542	0	0	5	.3	26.0	17.1	56.1
33	6	12,368	0	0	.7	0	14.0	12.5	72.8
34	5	10,324	0	0	0	0	10.9	10.5	78.6
35	5	11,851	0	0	0	.3	26.9	14.8	58.0
36	7	15,942	0	0	.5	1.1	43.1	19.1	36.2
37	6	14,948	0	0	( <u>1</u> /)	0	23.9	18.2	57.9
38	4	9,915	0	0	0	0	22.5	19.7	57.8
39	1	2,922	0	0	0	0	9.7	5.6	84.7
40	5	14,300	0	0	0	0	29.3	10.4	60.3
41	2	7,208	0	0	.2	4.1	63.3	12.0	20.4
42	4	12,526	0	0	0	0	39.4	19.0	41.6
43	3	9,825	0	0	$(\underline{1}/)$	0	59.6	19.3	21.1
44	0								
45	1	3,484	0	0	0	0	30.0	18.8	51.2
46	1	4,129	0	0	0	0	25.6	28.4	46.0
47	0								
48	1	4,178	0	0	0	3.1	55.6	21.6	19.7
Total or average	479	416,908	( <u>1</u> /)	0	.1	.2	38.4	10.0	51.3

 $<sup>\</sup>frac{1}{2}$  Less than 0.05 percent.

Table 15.—Distribution of veneer grade and item by thickness, log grade 1, red and white fir

77	1			-	Veneer grade				Total	Below grade
Veneel	Veneer item	A	A patch	В	B patch	D	C plug	Q	veneer volume	veneer volume
		1		1	Percent		1 1 1	1	Square feet, 3/8-inch basis -	8-inch basis
Full sheets	1/10 inch	0	0	1	e	97	34	16	10,680	48
	1/8 inch	0	0	0	2	47	38	13	16,468	12
	3/16 inch	1	1	1	1	-	1	1		1
Half sheets	1/10 inch	0	0	1	0	64	14	21	3,773	10
	1/8 inch	0	0	0	0	94	Φ	97	6,645	18
	3/16 inch	0	0	0	0	93	0	7	10,247	6
Random width	1/10 inch	0	0	2	0	63	∞	27	4,624	361
	1/8 inch	0	0	0	0	54	5	41	9,178	643
	3/16 inch	0	0	0	0	98	0	14	3,658	146

Table 16.—Distribution of veneer grade and item by thickness, log grade 2, red and white fir

,					Veneer grade	de			Total	Below grade
Veneer item	tem	A	A patch	Д	B patch	O	C plug	D	veneer volume	veneer volume
		1 1 1	1 1 1	1	- Percent -	1	1 1 1	1	Square feet, 3/8-inch basis	3/8-inch basis
Full sheets	1/10 inch	0	0	0	0	77	27	29	16,358	231
	1/8 inch	0	0	0	0	26	36	38	25,807	48
	3/16 inch	!	!	1	1	!	1	1	1	-
Half sheets	1/10 inch	0	0	0	0	61	9	33	7,377	20
	1/8 inch	0	0	0	0	36	14	20	14,488	73
	3/16 inch	0	0	0	0	89	0	32	11,314	6
Random width	1/10 inch	0	0	0	0	59	en	38	10,417	924
	1/8 inch	0	0	$(\overline{1})$	0	52	7	77	16,912	1,429
	3/16 inch	0	0	0	0	80	0	20	4,719	320

 $\frac{1}{2}$  Less than 0.05 percent.

Table 17.—Distribution of veneer grade and item by thickness, log grade 3, red and white fir

• •					Veneer grade	de			Total	Below grade
Veneer item	tem	A	A patch	В	B patch	O	C plug	Q	veneer volume	veneer volume
		1 1	1 1 1	1 1	- Percent	1	1 1 1	1	Square feet, 3/8-inch basis -	/8-inch basis
Full sheets	1/10 inch	0	0	0	0	47	16	37	10,628	77
	1/8 inch	$(\underline{1}/)$	0	0	0	51	12	37	20,087	12
	3/16 inch	;	1	1	1	1		1	Į.	1
Half sheets	1/10 inch	0	0	0	0	32	en	65	5,403	1.5
	1/8 inch	0	0	0	0	52	9	42	8,411	54
	3/16 inch	0	0	0	0	73	0	27	23,233	27
Random width 1/10 inch	1/10 inch	0	0	0	0	43	2	55	9,353	1,162
	1/8 inch	0	0	0	0	55	2	43	11,812	976
	3/16 inch	0	0	0	0	77	0	23	7,694	445

 $\frac{1}{2}$  Less than 0.05 percent.

Table 18.—Distribution of veneer grade and item by thickness, log grade 4, red and white fir

					Veneer grade	a a			Total	Below grade
Venee	Veneer item	A	A patch	В	B patch	C	C plug	Q	Veneer Volume	Veneer volume
		1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 1	Percent -	1	1 1 1 1	) 	Square feet, 3/8-inch basis	/8-inch basis
Full sheets	1/10 inch	0	0	0	0	13	12	75	18,758	106
	1/8 inch	0	0	0	0	2	14	84	23,266	48
	3/16 inch	ŀ	1	1	1	1	1	1		!
Half sheets	1/10 inch	0	0	0	0	10	e	87	20,272	103
	1/8 inch	0	0	0	0	9	7	06	21,745	180
	3/16 inch	0	0	0	0	15	0	85	9,663	27
Random width 1/10 inch	1/10 inch	0	0	0	0	15	H	84	21,123	2,105
	1/8 inch	0	0	0	0	19	1	80	27,443	3,290
	3/16 inch	0	0	0	0	19	0	81	5,352	739

Table 19.—Distribution of veneer grade and item by thickness, all grades, red and white fir logs

;				Vene	Veneer grade				Total	Below grade
Veneer ıtem	rem	A	A patch	В	B patch	O	C plug	D	veneer volume	veneer volume
		1	8 8 1 8	1 1 1	Percent -	1 1 1	] 	1 1	Square feet, 3/8-inch basis	3/8-inch basis
Full sheets	1/10 inch	0	0	0	П	35	21	43	56,424	462
	1/8 inch	$(\underline{1}/)$	0	0	(1/)	29	25	97	85,628	120
	3/16 inch	1	1	!	1	!	1		1	
Half sheets	1/10 inch	0	0	0	0	29	7	29	36,825	148
	1/8 inch	0	0	0	0	27	Φ	65	51,289	325
	3/16 inch	0	0	0	0	99	0	34	54,457	72
Random width 1/10 inch	1/10 inch	0	0	0	0	36	2	62	45,517	4,552
	1/8 inch	0	0	(1/)	0	39	ŕ	58	65,345	6,308
	3/16 inch	0	0	0	0	99	0	36	21,423	1,650
Totals									416,908	13,637

 $\frac{1}{2}$ / Less than 0.05 percent.

## APPENDIX B

BLOCKS

Table 20.—Block scale, veneer tally, and cubic volumes by scaling diameter, grade 1 red and white fir blocks

Ctross   Net   3/9-inch   Recovery   Bilock   Veneer   Becovery   Bellow   Core		Number	Scale	.e	Veneer tally	tally			Volume			
- Board feet -	b1	of	Gross	Net	Volume, 3/8-inch basis	Recovery	Block	Veneer	Recovery	Below grade veneer	Core	Residue
10			1	feet -	Square		1	feet	Percent		Cubic feet	1
1.00		1	10	10	!	0	3.11	0	0	0	0	3.11
30         20         16         .80         5.93         .89         .12         1.92           40         30         12         .40         8.99         .40         4.45         .12         1.98           150         40         30         12         .40         8.99         .40         4.45         .10         8.77         .10         8.72         .10         8.74         8.77         .10         8.77         .10         8.77         .10         8.72         .10         8.72         .10         8.72         .10         8.72         .10         8.72         .10         8.72         .10		0	1	1	1	1	1	!	}	}	1	1
30         20         16         .80         5.93         .53         8.94         .12         1.92           40         30         112         .40         8.99         .46         4.45         .15         1.98           50         40         71         1.77         11.13         2.38         33.27         .10         8.77           60         40         144         3.60         11.18         4.77         42.67         .10         8.77           70         40         144         3.60         11.18         4.77         42.67         .10         1.98           70         40         144         3.60         11.18         4.77         42.67         .10         1.98           70         240         144         3.60         11.18         4.77         42.67         .10         1.98           250         240         14.87         15.60         34.02         2.14         .73         1.98           280         250         14.47         25.78         25.58         16.21         31.14         1.98           1100         150         233         1.55         2.96         16.71         1.04		0	1	1		!	1	}	!		!	!
150		_	30	20	16	.80	5.93	.53	8.94	.12	1.92	3.36
40         30         12         .40         8.99         .40         4.45         .15         1.98           60         40         71         1.77         11.33         2.38         31.27         .10         8.77           70         40         71         1.77         11.33         2.38         21.01         .42         1.98           70         40         71         1.77         11.33         2.38         21.01         .42         1.98           70         40         77         1.08         44.85         15.66         34.92         2.17         2.19         1.98           80         340         851         2.50         53.78         28.20         2.14         .73         1.98           110         323         1.55         2.94         1.48         2.5.88         2.28         2.16         .73         1.98         1.98         1.98         1.98         1.99         1.98         1.98         1.99         1.99         1.98         1.98         1.99         1.99         1.98         1.98         1.98         1.99         1.99         1.99         1.99         1.99         1.99         1.99         1.99         1.99		0	1	!	-	-	1	Î	1	1	-	-
150		٦	04	30	12	04°	8.99	04°	4.45	.15	1,98	94.9
60         40         171         1.77         11.33         2.38         21.01         .42         1.98           70         40         144         3.60         11.18         4.77         42.67         .198           270         240         475         1.98         44.85         15.66         34.92         2.17         5.76           280         340         25.94         14.97         10.72         71.61         .33         1.34           380         360         360         23.1         2.54         14.97         21.62         2.17         2.13         1.98           150         250         23.2         2.54         14.97         25.18         28.48         .29         13.34         1.98         13.34         1.98         13.34         1.98         13.34         1.98         13.34         1.98         13.34         1.98         13.34         1.98         1.98         13.34         1.98         1.98         1.98         1.98         1.98         1.98         1.98         1.98         1.98         1.98         1.99         1.98         1.98         1.99         1.99         1.99         1.99         1.99         1.99         1.99		3	150	140	282	2.01	27.83	9.26	33.27	.10	8.77	9.70
70         40         144         3.60         11.18         4.77         42.67         .02         1.98           270         240         475         1.98         44.85         15.66         34.92         2.17         5.76           110         110         323         2.94         14.87         15.66         34.92         2.17         5.76           280         250         250         785         3.14         47.83         25.88         3.48         1.98         1.98           150         150         250         785         3.14         47.83         25.88         3.74         1.98         <		-	09	40	71	1.77	11.33	2,38	21,01	.42	1.98	6.55
270         240         475         1.98         444.85         15.66         34.92         2.17         5.76           110         110         323         2.94         14.97         10.72         71.61         33         1.98           360         340         323         2.94         14.97         10.72         7.11         33.48         1.39         13.34           150         150         233         1.55         2.50         16.21         63.03         1.7         2.43         1.92         1.92         1.92         1.92         1.92         1.92         1.93		_	70	40	144	3.60	11.18	4.77	42.67	.02	1.98	4.41
270         240         475         198         44.85         15.66         34.92         2.17         5.76         35.78         34.92         2.17         5.76         35.78         34.92         2.17         3.16         34.92         3.17         3.16         3.18         3.19         3.30		0	-	1	1	!	!	1	1	1	1	1
110   110   323   2.94   14.97   10.72   21.61   .33   1.98   280   280   28.44   .73   3.34   3.34   280   280   280   28.78   28.25   28.44   .73   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.34   3.35   3.48   2.25   28.59   1.17   2.43   3.40   3.90   3.40   3.35   3.48   2.25   3.48   2.28   3.48   2.28   3.48   2.28   3.48   2.28   3.48   2.28   3.48   2.28   3.48   2.28   3.48   2.32   3.44   2.32   3.44   2.32   3.44   2.32   3.44   2.32   3.44   2.32   3.44   3.4		3	270	240	475	1,98	44.85	15.66	34.92	2.17	5.76	21.26
360         340         851         2.50         55.48         .73         13.34           150         150         239         1.75         25.58         53.48         .79         13.34           150         150         239         1.75         25.69         16.21         63.10         .13         1.92           170         160         492         3.07         25.69         18.78         .23         .13         1.92           630         520         1.885         3.63         86.99         18.78         2.35         1.92           630         520         1.885         3.63         86.99         18.78         2.31         1.92           920         740         1,957         2.64         130.18         66.431         49.40         1.04         25.73         6.21           810         740         1,957         2.64         130.18         66.31         1.94         1.92           810         740         1,757         2.64         130.18         66.431         49.40         1.04         25.73         3.84           80         410         1,372         3.15         166.09         82.78         49.54		_	110	110	323	2.94	14.97	10,72	71.61	.33	1.98	1.94
280         250         785         3.14         47.83         25.58         53.48         .29         3.90         1           150         150         492         3.07         25.69         16.21         63.10         .13         1.92         1           170         160         492         3.07         25.69         16.21         63.10         .13         1.92           190         190         567         2.98         25.69         18.78         73.10         .13         1.92           630         740         1,987         2.64         130.18         64.31         49.40         1.04         25.73           80         740         1,688         2.28         117.78         65.79         47.37         2.52         12.43           80         410         1,372         3.35         79.70         45.49         57.08         25.73         9.23           80         410         1,372         2.33         99.44         47.90         5.74         1.98         2.7           80         410         1,47         2.33         166.09         82.28         49.54         1.70         1.98           1,110         790<		3	360	340	851	2,50	53.78	28.20	52.44	.73	13,34	11.51
150   150   233   1.55   26.27   7.51   28.59   .17   2.43   1.92   190   190   567   2.98   25.69   16.11   63.10   .13   1.92   1.9		2	280	250	785	3.14	47.83	25.58	53.48	. 29	3.90	18.06
170   160   492   3.07   25.69   16.21   63.10   .13   1.92   1.92   1.90   1		_	150	150	233	1.55	26.27	7.51	28.59	.17	2.43	16.16
190         190         567         2.98         25.69         18.78         73.10         .59         1.92           630         520         1,885         3.63         86.95         62.41         71.78         2.32         6.21           920         740         1,957         2.64         130.18         64.31         49.40         1.04         25.73           810         740         1,688         2.28         117.78         55.79         47.37         2.52         12.43           810         740         1,688         2.28         117.78         55.79         47.34         9.23         6.71           9.0         873         2.91         56.11         28.87         53.35         .94         1.98           1,110         790         2,91         56.11         28.87         53.35         .94         1.98           1,110         790         2,91         56.11         28.87         47.84         47.90         37.91           1,110         790         2,91         95.33         36.70         66.61         1.35         12.29           400         370         1,108         2.99         55.33         36.70         1.		_	170	160	492	3.07	25.69	16.21	63.10	.13	1.92	7.43
630         520         1,885         3.63         86.95         62.41         71.78         2.32         6.21           920         740         1,957         2.64         130.18         64.31         49.40         1.04         25.73            740         1,688         2.28         117.78         55.79         47.37         2.52         12.43           580         410         1,372         3.35         79.70         45.49         57.08         .37         9.23           30         620         1,447         2.33         99.88         47.84         47.90         5.37         9.23           1,110         790         2,492         3.15         166.09         82.28         49.54         170         13.32           390         340         603         1.77         73.05         19.44         47.90         5.37         3.84           400         370         1,108         2.99         55.33         36.70         66.31         1.35         12.29           401         1,108         2.99         55.33         36.70         66.31         1.35         12.29           400         1,108         2.99         55.		1	190	190	267	2.98	25.69	18.78	73.10	.59	1.92	4.40
920         740         1,957         2.64         130.18         64.31         49.40         1.04         25.73           810         740         1,688         2.28         117.78         55.79         47.37         2.52         12.43           580         410         1,372         3.35         79.70         45.49         57.08         .37         9.23           370         300         873         2.91         54.11         28.87         53.35         .94         1.98           1,110         790         2,492         3.35         16.09         82.48         47.84         47.90         5.37         3.84           1,110         790         2,492         3.77         73.05         19.44         26.61         1.79         13.32           400         370         1,108         2.99         55.33         36.70         66.33         1.92         1.92		3	630	520	1,885	3.63	86.95	62,41	71.78	2.32	6.21	16.01
810         740         1,688         2.28         117.78         55.79         47.37         2.52         12.43           580         410         1,372         3.35         79.70         45.49         57.08         .37         9.23           370         580         11,372         2.91         54.11         28.87         53.35         .94         1.98           370         620         1,447         2.33         99.88         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           400         340         60.3         1.77         73.05         19.44         26.61         1.35         12.29           400         370         1,108         2.93         55.33         36.70         66.33         .05         1.92		7	920	740	1,957	2.64	130,18	64.31	49.40	1.04	25.73	39.10
810         740         1,688         2.28         117.78         55.79         47.37         2.52         12.43           580         410         1,372         3.35         79.70         45.49         57.08         .37         9.23           330         300         873         2.91         54.11         28.87         53.35         .94         1.98           720         620         1,447         2.33         99.88         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           400         370         1,108         2.99         55.33         36.70         66.33         .05         1.92           400         370         1,108         2.99         55.33         36.70         66.33         .05         1.92		0	ì	!	1	1	!	!	!	!	1	!
580         410         1,372         3.35         79.70         45.49         57.08         .37         9.23           30         300         873         2.91         54.11         28.87         53.35         .94         1.98           320         620         1,447         2.33         99.88         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           400         370         1,108         2.99         55.33         36.70         66.33         .05         1.92		3	810	740	1,688	2.28	117.78	55.79	47.37	2.52	12.43	47.04
330         873         2.91         54.11         28.87         53.35         .94         1.98           720         620         1,447         2.33         99.88         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           400         370         1,108         2.99         55.33         36.70         66.33         .05         11.29		2	580	410	1,372	3.35	79.70	45.49	57.08	.37	9.23	24.61
330         300         873         2.91         54.11         28.87         53.35         .94         1.98           1,110         790         2,492         3.15         16.09         82.28         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         16.09         82.28         49.54         1.70         13.32           400         370         1,108         2.99         55.33         36.70         66.31         .05         11.92		0	-	1		1	-	illo age	-	1	-	!
1,110         720         620         1,447         2.33         99.88         47.84         47.90         5.37         3.84           1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           400         370         1,108         2.99         55.33         36.70         66.33         .05         11.29 <td< td=""><td></td><td></td><td>330</td><td>300</td><td>873</td><td>2.91</td><td>54.11</td><td>28.87</td><td>53,35</td><td>76°</td><td>1.98</td><td>22.32</td></td<>			330	300	873	2.91	54.11	28.87	53,35	76°	1.98	22.32
1,110         790         2,492         3.15         166.09         82.28         49.54         1.70         13.32           390         340         60.3         1.77         73.05         19.44         26.61         1.35         12.29           400         1,108         2.99         55.33         36.70         66.33         .05         1.92		2	720	620	1,447	2.33	88.66	47.84	47.90	5.37	3.84	42.83
390     340     603     1.77     73.05     19.44     26.61     1.35     12.29       400     370     1,108     2.99     55.33     36.70     66.33     .05     1.92		c"ì	1,110	790	2,492	3.15	166.09	82.28	49.54	1.70	13.32	68.79
400         370         1,108         2.99         55.33         36.70         66.33         .05         1.92 <td></td> <td></td> <td>390</td> <td>340</td> <td>603</td> <td>1.77</td> <td>73.05</td> <td>19.44</td> <td>26.61</td> <td>1.35</td> <td>12.29</td> <td>39.97</td>			390	340	603	1.77	73.05	19.44	26.61	1.35	12.29	39.97
		-	400	370	1,108	2.99	55.33	36.70	66.33	• 05	1.92	16.66
		0	i		l l		-	-	1		1	1
		0	1	1	1	1	1	1		-	-	!
1,340 1,240 3,926 3.17 165.54 128.43 77.58 .87 4.14 2,800 2,510 7,965 3.17 2.05 99.04 45.41 45.85 4.18 2.23 13,300 11,370 32,310 2.84 1,929.19 1,062.07 55.05 29.15 160.03		0	İ	1	†		1	1	-	1	-	1
640 400 1,368 3,42 104,39 45,14 43.24 .47 9.18 1,340 1,240 3,926 3.17 165.54 128.43 77.58 .87 4.14 2,800 2,510 7,965 3.17 389.70 259.96 66.71 2.75 9.65 740 670 1,375 2.05 99.04 45.41 45.85 4.18 2.23 13,300 11,370 32,310 2.84 1,929.19 1,062.07 55.05 29.15 160.03		0	1	-	1	1	1	!		1	1	ŀ
640         400         1,368         3.42         104.39         45.14         43.24         .47         9.18           1,340         1,240         3,926         3.17         165.54         128.43         77.58         .87         4.14           2,800         2,510         7,965         3.17         389.70         259.96         66.71         2.75         9.65           740         670         1,375         2.05         99.04         45.41         45.85         4.18         2.23           13,300         11,370         32,310         2.84         1,929.19         1,062.07         55.05         29.15         160.03		0	}	1	!		;	1	1	!	1	!
640         400         1,368         3.42         104.39         45.14         43.24         .47         9.18           1,340         1,240         3,926         3.17         165.54         128.43         77.58         .87         4.14           2,800         2,510         7,965         3.17         389.70         255.96         66.71         2.75         9.65           740         670         1,375         2.05         99.04         45.41         45.85         4.18         2.23           13,300         11,370         32,310         2.84         1,929.19         1,062.07         55.05         29.15         160.03		0	1	!	1	]	-	1		1	-	!
1,340     1,240     3,926     3.17     165.54     128.43     77.58     .87     4.14       2,800     2,510     7,965     3.17     389.70     259.96     66.71     2.75     9.65       740     670     1,375     2.05     99.04     45.41     45.85     4.18     2.23       13,300     11,370     32,310     2.84     1,929.19     1,062.07     55.05     29.15     160.03		l	049	005	1,368	3.42	104.39	45.14	43.24	.47	9.18	49.60
2,800     2,510     7,965     3.17     389.70     259.96     66.71     2.75     9.65       740     670     1,375     2.05     99.04     45.41     45.85     4.18     2.23       13,300     11,370     32,310     2.84     1,929.19     1,062.07     55.05     29.15     160.03		2	1,340	1,240	3,926	3.17	165.54	128.43	77.58	.87	4.14	32.10
740         670         1,375         2.05         99.04         45.41         45.85         4.18         2.23           13,300         11,370         32,310         2.84         1,929.19         1,062.07         55.05         29.15         160.03		4	2,800	2,510	7,965	3.17	389.70	259.96	66.71	2.75	9.65	117.34
13,300 11,370 32,310 2.84 1,929.19 1,062.07 55.05 29.15 160.03		1	740	029	1,375	2.05	90.04	45.41	45.85	4.18	2.23	47.22
700001 1111 100001 11111 100001 100001 100001		87	13 300	11 370	32 310	78 6	1 929 19	1 062 07	20 27	20 15	160.03	70 22
		0	7000	7/2677	>+11697	5.0	1,767.47	T,007.00	)	67.47	2000	1111

Table 21.—Block scale, veneer tally, and cubic volumes by scaling diameter, grade 2 red and white fir blocks

Block	Number	Scale	ıle	Veneer	tally			Volume	a)		
scaling diameter (inches)	of blocks	Gross	Net	Volume, 3/8-inch basis	Recovery	Block	Veneer	Recovery	Below grade veneer	Core	Residue
		Board	feet	Square		Cubic	c feet	Percent	1 1	Cubic feet	         
œ	П	10	10	27	2.70	3,88	06.0	23.20	0	1.92	1.06
6	-	20	20	П	.05	4.53	.05	1.10	0	0	4.48
0	0	1	!	}	1	!	1	1	1	1	!
_	5	150	150	283	1.89	28.13	9.28	32.99	. 28	9.84	8.73
12	4	160	150	372	2.48	30,53	12.22	40.03	.55	7.86	06.6
9	0	1	1	1	l i	I 1	ŀ	1	}	1	1
<+ I	4	240	230	390	1.70	39.86	12.79	32.09	.97	12.69	13.41
50 1	0 (	1 0	1 0	1 0	1 0	1 0	1 1	1 0	1	1 6	0
1 0	2	160	160	382	2.39	23.98	12.54	52.29	0	3.96	7.48
_ <	.n. c	270	270	851	3.15	43.98	27.97	63.60	65.	5.94	84.0
nc	7 6	077	350	1 030	7.93	50.99	10°70 33 63	52.27	1 77	7 88	9.43
	٠ ٥	280	280	764	2,73	37.93	24.91	65.67	2.56	3.96	8.50
	2	300	290	996	3,33	45.03	31,94	70.93	1,39	3.90	7.80
•	4	680	670	1,992	2.97	100.60	65.37	64.98	1.09	7.80	26.34
~	5	950	076	2,657	2.83	126.18	86.53	68.58	2.39	9.72	27.54
_	5	420	700	1,159	2.90	56.12	37,35	66.55	.28	8.72	9.77
	4 (	920	890	2,528	2.84	126.18	83.12	65.87	1.29	14.48	27.29
	7 4	1 620	1 260	1,342 3,474	26.7	231 64	11/, 82	04.70	./I 1 25	39.00	76.57
	· m	870	820	1,487	1.81	118.11	49.21	41.66	3,38	7.27	58,25
	7	1,240	1,120	3,325	2.97	178.58	109.18	61.14	1.02	12.62	55.76
_	T	330	310	916	3.15	43.34	32,36	74.66	69°	1.80	8.49
	9	2,160	1,850	5,124	2.77	280.15	168.91	60.29	3.96	15.12	92.16
01.	co o	1,110	1,040	2,709	2.60	164.24	89.61	54.56	9.19	5.76	59.68
	en e	1,1/0	1,060	3,050	2.88	161.07	100.96	62.68	1.36	9.32	49.43
	200	880	740	1 974	2 67	156 16	64.49	41.30	2 07	11 16	78.04
	,	460	420	1,016	2.42	61.62	33.66	54.62		1.86	25.77
_	3	1,530	1,410	3,695	2.62	205.02	121.90	59.46	2,53	6.15	74.44
~	2	1,080	750	1,573	2.10	134.24	51.73	38.54	1.21	11.16	70.14
_	2	1,120	830	2,525	3.04	166.65	83,35	50.02	1.40	11.46	70.44
_	7	009	550	1,492	2.71	80.36	49.14	61.15	.20	1.98	29.04
_ (		640	610	2,056	3.37	78.34	68.11	86.94	.45	1.98	7.80
	0	0/9	630	T,269	Z.01	/4.54	4T.85	56.14	T.30	87.8	23.11
	) r	1 7	1 0	1 0	1 0	1 0	1 3	1 1	1 0	1 0	1 6
ada 1	٦ ،	740	060	8//	1.18	128.00	25.66	20.02	10°/	10.12 31.34	85.21
n 4	o	790	760	7 120	2.30	320.48	140.27	07.04	3.02	91.34 9.05	25 36
	- <del></del>	830	740	2,119	2.86	137.72	70.01	50.84	2.14	3.54	62.03
Total or	94	26,960	24,010	63,655	2.65	3,832.45	2,096.03	54.69	57.17	312.82	1,366.43
1462											

Table 22.—Block scale, veneer tally, and cubic volumes by scaling diameter, grade 3 red and white fir blocks

Block	Marsh	Scale	ale	Veneer	tally			Volume	ne		
scaling diameter (inches)	of blocks	Gross	Net	Volume, 3/8-inch	Recovery	Block	Veneer	Recovery	Below grade veneer	Core	Residue
		Board	d feet			Cubic	feet	Percent		Cubic feet	1 1
00	9	09	09	105	1.75	23.37	3.48	14.89	0.07	13,63	6.19
6	23	460	760	775	1.68	100.95	25,52	25.28	.72	45.31	29.40
10	39	1,170	1,160	1,683	1.45	201.98	55.68	27.57	2.50	75.55	68.25
11	48	1,440	1,440	3,060	2.13	306,39	100.67	32.86	2.48	96°36	103.88
12	46	1,840	1,810	3,983	2.20	338.53	130.97	38.69	3.52	97.82	106.22
13	67	2,450	2,420	5,994	2.48	435.00	197,00	45.29	7.26	100.27	130,47
14	36	2,160	2,140	5,440	2.54	365,43	179.36	49.08	3.38	81.66	101,03
1.5	36	2,520	2,490	6,631	2.66	406.92	217.85	53.54	2.98	82.58	103.51
16	33	2,640	2,610	7,436	2.85	433.64	244.35	56.35	4.35	72.99	111.95
1.7	31	2,790	2,680	6,871	2.56	449.54	226.16	50.31	9.39	04.69	144.59
18	23	2,530	2,500	7,017	2.81	381,01	230.50	60.50	6.01	46.34	98.16
19	24	2,880	2,880	8,141	2.83	429.03	267.37	62.32	5.18	47.04	109.44
20	24	3,360	3,200	7,685	2.40	482.80	253.21	52.45	7.78	53.86	167.95
21	19	2,850	2,720	7,726	2.84	416.20	253,72	96.09	3.60	43.64	115.24
22	20	3,400	3,270	9,232	2.82	473.48	302,72	63.94	5.27	52.59	112.90
23	1.2	2,280	2,080	4,575	2.20	318.34	149.95	47.10	11.93	41.43	115.03
24	15	3,150	3,000	8,647	2.88	434.16	284.24	65.47	3.55	37.04	109.33
25	14	3,220	3,020	7,785	2.58	428.70	256.73	59.88	21.92	36.91	113.14
26	11	2,750	2,540	7,278	2.87	370.61	239.27	64.56	5.98	28.56	96.80
7.7	T.Z	3,210	2,970	7,/44	2.61	429.18	254.68	59.34	3.74	47°77	128.64
700	ر <u>ا</u>	1,450	1,360	3,531	2.60	189.92	114.53	60.30	4./4	20.49	9T*05
67	TT	3,4IU	0000	8,134	70.7	420°/	200.83	00.43	77.0	42.09	105 07
30	27	3,300	2,990	8,/23	26.2	428.90	285.38	60.54	87.0	32.20	103.04
33	0 ~	7,000	7,440	200,0	60.7	105 03	CU-017	09°T3	46.0	04.40	TO/ 1/07
222	4 0	1,46U	1,360	3,193	7 30	193.83	103.32 55.00	73.00	4,09	46°T7	38 90
34	7	7800	2 550	7 433	2.5	398 60	24.50	61.36	5.76	25.70	122.55
3 (	٠ ١٢	2,200	2 050	6 208	3.03	291.03	204.80	70.37	3.21	19.62	63.40
36	4	1,840	1,630	4.826	2,96	247,62	158.20	63.89	5.73	20.80	62.89
37	9	3,060	2,710	7,185	2.65	404.91	235.34	58.12	2.03	32.32	135.22
38	7	2,160	2,000	5,571	2.79	273.42	183,85	67.24	5.31	19.43	64.83
39	Н	260	510	1,424	2.79	71.49	46.97	65.70	.19	1.98	22.35
70	2	3,000	2,770	7,883	2.85	376.26	259.11	68.86	7.11	26.01	84.03
41	2	1,280	1,170	2,904	2.48	163.34	94.64	57.94	1.62	16.95	50.13
42	П	029	290	1,751	2.97	81.80	57.81	70.67	1.48	1.98	20.53
43	5	1,400	1,270	2,987	2.35	176.86	98.58	55.74	3.96	10.35	63.97
777	0 0	£ 3	1	1			1	-	1		!
047	> -	100	1 1 1	1 0 0		100	76 22	00 77	1 0	7 21	70 00
	7	06/	OT /	2,010	7.03	103.33	00.37	04.03	T.00	TC * /	/0.07
Total or average	599	80,220	75,340	199,829	2.65	11,554.90	6,568.01	56.84	179.92	1,509.19	3,297.78
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Table 23.—Block scale, veneer tally, and cubic volumes by scaling diameter, grade 4 red and white fir blocks

scaling diameter				100100	cally			Volume	חווב		
(Inches)	of blocks	Gross	Net	Volume, 3/8-inch basis	Recovery	Block	Veneer	Recovery	Below grade veneer	Core	Residue
		Board	l feet	Square		Cubic	c feet	Percent	1 1	Cubic feet	         
11	2		09	82	1,37	13.07	2.69	20,58	0	8,11	2.27
12	ŕ	120	120	187	1.56	23.73	6.12	25.79	.23	6.39	10.99
13	6	450	430	528	1.23	82.21	17.42	21.19	1.32	37.01	26.46
14	9	360	340	387	1.14	61.83	12.64	20.44	.40	29.29	19.50
1.5	œ	260	550	736	1.34	97.84	23.97	24.50	,84	39.49	33.54
16	13	1,040	066	2,026	2.05	172.01	66.99	38.94	4.59	43.39	57.04
1.7	11	066	046	1,886	2.01	167.67	62.04	37.00	2.36	41.79	61.48
18	7	770	700	1,161	1.66	117,50	38.12	32.44	4.85	35.39	39.14
19	16	1,920	1,860	4,070	2.19	296.16	133.83	45.19	64°4	53.01	104.83
20	13	1,820	1,820	3,833	2.11	272.76	126.26	46.29	86.	47.10	98.42
21	1.0	1,500	1,330	2,936	2.21	225.72	89.96	42.83	6.24	35.67	87.13
22	10	1,700	1,490	3,337	2.24	243.60	110.18	45.23	3.89	36.59	92.94
23	12	2,280	2,150	5,475	2.55	315.72	181,18	57.39	4.73	28.16	101,65
24	00	1,680	1,500	3,493	2.33	229.70	115.62	50.34	2.86	33.51	77.71
25	10	2,300	2,230	5,101	2.29	313.03	168.44	53.81	4.72	33.70	106.17
26	10	2,500	2,340	5,671	2.42	330.00	187.38	56.78	5.71	26.26	110.65
27	11	2,970	2,820	7,576	2.69	394.43	248.38	62.97	5.65	35.96	104.44
28	00	2,320	2,180	4,708	2.16	308.54	154.76	50.16	6.27	27.27	120.24
29	12	3,720	3,510	9,048	2.58	511.03	297.80	58.27	11.30	29.61	172.32
30	7	1,320	1,280	3,197	2.50	178.09	105.70	59.35	3.00	8.45	76.09
31	9	2,160	2,010	4,475	2.23	280.25	148.18	52.87	4.98	17.09	110.00
32	9	2,220	2,070	5,136	2,48	296.42	169.74	57.26	4.35	19.65	102,68
33	7	2,730	2,630	6,994	2.66	372.68	231.06	62.00	12.39	16.32	112.91
34	7	2,800	2,580	6,500	2.52	397.69	213.12	53.59	17.03	30.60	136.94
35	2	880	830	2,209	2.66	121.89	72.88	59.79	3.49	11.36	34.16
36	3	1,380	1,320	2,989	2.26	188.62	97.78	51.84	14.08	12.82	63.94
37	5	2,550	2,280	4,302	1.89	303.76	141.03	46.43	21.65	17.11	123.97
38	Σ	2,700	2,320	5,448	2.35	353.56	179.32	50.72	12.66	24.41	137.17
39	2	1,120	1,020	2,941	2.88	143.00	97.07	67.88	1.80	5.61	38.52
40	4	2,400	2,300	4,838	2.10	304.39	159,99	52.56	3.78	19.11	121,51
41	0	1	!	!	1	!	1	!	1	1	1
42	2	1,340	1,240	3,016	2.43	168.78	68.66	59.18	1.97	6.32	09.09
43	Н	700	049	1,638	2.56	83.77	54.24	64.75	.82	1.98	26.73
747	2	1,480	1,380	3,235	2.34	184.79	106.78	57.78	1.76	11.79	94.49
45	⊣	160	700	1,699	2.43	101,44	56.01	55.21	4.82	4.97	35.64
Total or	236	55,600	51,960	120,858	2.33	7,655.68	3,983,29	52.03	180.01	835.29	2,657.09
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Table 24.—Block scale, veneer tally, and cubic volumes by scaling diameter, all grades red and white fir blocks

Number	Sca	Scale	Veneer	tally			Volume			
Gre	Gross	Net	Volume, 3/8-inch basis	Recovery	Block	Veneer	Recovery	Below grade veneer	Core	Residue
1	Board	d feet	Square		Cubic	feet	Percent	1	Cubic feet	1 1 1 1
	10	10	0	0	3.11	0	0	0	0	3.11
	70	70	132	1.88	27.25	4.38	16.07	.07	15.55	7.25
	480	480	776	1.62	105.48	25.57	24.24	.72	45.31	33.88
	,200	1,180	1,699	1.44	207.91	56.21	27.04	2.62	77.47	71.61
1	,650	1,650	3,425	2.08	347.59	112.64	32.41	2.76	117.31	114.88
2	,160	2,110	4,554	2.16	401.78	149.71	37.26	4.45	114.05	133.57
m	3,050	2,990	6,804	2.28	545.04	223.68	41.04	8.68	146.05	166.63
2	,820	2,750	6,288	2.29	478.45	207.17	43.30	5.17	125.62	140.49
3	3,150	3,080	7,511	2.44	515.94	246.59	47.79	3.84	124.05	141.46
C)	0,840	3,760	7,846	2.62	629.63	323.88	51.44	8.94	120.34	176.47
4	,320	4,130	10,083	2.44	706.04	331.83	47.00	14.51	122.89	236.81
3	,630	3,520	8,991	2.55	544.47	295.54	54.28	11.19	89.07	148.67
5	,520	5,430	14,092	2.60	831.80	463.02	55.66	12.17	119.27	237.34
5	5,740	5,550	13,067	2,35	841.32	429.96	51.10	9.61	108.82	292.93
7	,800	067,4	11,861	2.64	713.22	389,85	54.66	11.40	85.64	226.33
5	5,950	5,590	15,053	2.69	843.37	84.464	58.63	10.38	98.90	239.61
5	5,700	5,360	13,274	2.48	785.93	436.44	55.53	19.64	81.23	248.62
5	5,880	5,420	15,184	2.80	806.93	499.62	61.92	9.01	85.48	212.82
7	7,360	6,880	17,371	2.52	60.866	572.60	57.37	28.97	110.82	285.70
ľΩ	5,750	5,340	14,291	2.68	766.44	471.02	61.46	12.40	58.72	224.30
00	,610	7,790	20,482	2.63	1,173.03	673.67	57.43	13.16	129.51	356.69
ľΩ	,220	4,770	11,098	2.33	696.27	363.99	52.28	14.76	64.26	253.26
00	370	7,680	20,507	2.67	1,146.32	673.83	58.78	18.54	85.12	368.83
S	,280	4,880	13,769	2.82	704.44	452.31	64.21	10.91	44.43	196.79
7	,920	6,920	17,608	2.54	1,025.51	580.98	56.65	21.25	70.53	352.75
U 1	,920	5,280	13,530	2.56	822.58	447.15	54.36	19.33	60.67	295,43
	5,070	4,740	12,343	2.60	710.97	407.45	57.31	17.74	44.57	241.21
	7,200	6,520	18,206	2.79	1,042.71	598.06	57.36	25.52	66.14	352,99
	3,960	3,620	10,391	2.87	569.08	342.17	60.13	8.77	42.14	176.00
	3,680	3,370	8,831	2.62	497.86	289.64	58.18	20.14	35.48	152.60
	7,140	6,400	15,182	2.37	913.69	498.27	54.53	26.21	55.58	333.63
	2,940	5,070	12,592	2.48	761.22	414.90	54.50	19.18	55.00	272.14
	2,800	2,360	068,9	2.92	381.14	227.39	99.69	3.39	19.05	131.31
	000,9	5,620	14,213	2.53	761.01	468.24	61.53	11.09	47.10	234.58
	2,560	2,180	6,328	2.90	346.07	207.89	60.07	2.54	28.11	107.53
	4,020	3,700	9,962	2.69	99.065	327.98	66.84	5.62	20.72	136.34
	4,900	4,420	12,590	2.85	650.33	412,78	63.47	7.53	21.98	208.04
	2,960	2,710	5,388	1.99	411.83	177.85	43.18	12.95	24.14	196.89
	3,040	2,650	6,193	2.34	421.92	204.28	48.42	7.84	36.31	173.49
	1,580	1,470	4,130	2.81	208.07	136.37	65.54	1.11	16.36	54.23
	830	740	2,119	2.86	137.72	70.01	20.84	2.14	3.54	62.03
г	176.080	162,680	416,652	2.56	24,972.22	13,709.40	54.90	446.25	2,817.33	7,999.24
	,			)		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
	The latest devices in	The second secon	The state of the s							

Table 25.—Veneer grade recovery by scaling diameter, block grade 1, red and white fir

	D	1 1 1	c	>			0.00	!	0 0 %	76.1	11.8		5.3	8.4	6.3	3.3	21.9	2.4	16.4	8.8	13.4	1	16.5	/ • /	,	13.7	24.3	18.9	2.3	!	ł	ľ	1	}	!	7.1	10.7	9.5	35.7		12.5
	C plug	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	c	>	1		P	!	1,2	T.0.	0 0		23.2	19.8	3.4	0	0	69.1	39.0	25.7	28.0	1	16.2	40.6	0 70	41.3	32.1	0	36.6	-	!	-	!	1	1	47.4	2.4	14.6	3.0		50.9
-de	U	nt	c	>			20.0	1 0	100.U	23.0	88.2	;	71.5	71.2	90.3	7.96	78.1	28.5	42.8	62.4	58.6	1	9.99	51./	- 04	70.7	43.6	81.1	53.3	1	i	f B	!	\$	1	45.5	79.0	75.9	61.3		1.co
Veneer grade	B patch	Percent	c	>	1 1		D	)	0 0	0 0	0	1	0	0	0	0	0	0	0	2.0	0	1	0	0	} <	0 0	0 0	0	0	ļ	;	1	1	}	1	0	7.5	0	0		1.0
	В	1	c	>	¦ ¦		0	١,	> 0	0 0	0		0	9.	0	0	0	0	1.8	1.1	0	ł	. 7	0		o	0	0	7.8	1	1	}	1	}	!	0	4.	(1/)	jo	,	ς.
	A patch	1 1 1	c	0	1		0	¦	0	00	0	1	0	0	0	0	0	0	0	0	0	!	0 (	0	0	0 0	0	0	0	ł	!	!	9	1	all of	0	0	0	0		0
	A	1 1	c	>	1	0	D	(	0	0 0	0	1	0	0	0	0	0	0	0	0	0		0 (	0	0	o c	0	0	0	}	1	1	9	}	1	0	0	0	0		o
Veneer	volume, 3/8-inch basis	Square feet	5	>		, ,	97	-	200	202	144	1	475	323	851	785	733	492	267	1,885	1.957	1	1,688	1,372	073	1 447	2,492	603	1,108	1	1	1	-	!	1	1,368	3,926	7,965	1,375		32,310
Number	of blocks		-	н с	o c	> -		> -	⊣ °	٦ -		0	e	7	E	2	IJ	1	1	რ -	7 '	0 (	m	7 0	- 0	7 7	ım	-	1	0	0	0	0	0	0	П	2	4	1		84
Block	scaling diameter (inches)		7	- 0	0 0	, ,	01.	11	1.2	17,	15	16	17	18	19	20	21	22	23	24	25	26	27	28	20	31	32	33	34	35	36	37	38	39	40	41	42	43	44	Total or	average

 $\frac{1}{2}$  Less than 0.05 percent.

Table 26.—Veneer grade recovery by scaling diameter, block grade 2, red and white fir

Sq	D 10 C N	Number	Veneer				0	3		
1         Z         2         0	scaling diameter (inches)	of blocks	volume, 3/8-inch basis	A		æ		O		Q
1			Square feet	1 1 1	1 1 1 1 1	1 1 1	Perce	+ + + + + + + + + + + + + + + + +	1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		Н	27	0	0	0	0	92.6	0	7.4
5         28.7         -		1		0	0	0	0	100.0	0	0
\$ 5283 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0	E E	1	;	!	;	i	1	
4         372         0         0         76.3         0           4         390         0         0         0         78.9         2.6           4         390         0         0         0         0         0         0           2         382         0         0         0         0         0         0         0           2         490         0         0         0         0         0         0         0           2         1,030         0         0         0         0         0         0         0           2         1,030         0         0         0         0         0         0         0           2         1,030         0 <t< td=""><td></td><td>10</td><td>283</td><td>0</td><td>0</td><td>0</td><td>0</td><td>82.3</td><td>0</td><td>17.7</td></t<>		10	283	0	0	0	0	82.3	0	17.7
0         0         0         0         78.9         2.6           1         0 <td></td> <td>7</td> <td>372</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>76.3</td> <td>0</td> <td>23.7</td>		7	372	0	0	0	0	76.3	0	23.7
4         390         0         0         78.9         2.6           2         382         0		0	Î	1	1 1	1	;	-	!	1
2         382         0		7	390	0	0	0	0	78.9	2.6	18.5
2         382         0         0         68.0         18.1           2         490         0         0         60.0         18.1           2         490         0         0         74.1         14.5           2         764         0         0         74.1         14.5           2         764         0         0         74.1         14.5           4         1,992         0         0         60.0         14.5           5         2,657         0         0         60.0         16.6           4         1,992         0         0         60.0         16.6           5         1,258         0         0         60.0         16.6           6         1,474         0         0         60.0         16.6           7         1,474         0         0         64.0         16.6           8         1,447         0         0         64.0         16.4           9         1,447         0         0         64.0         16.4           1         1,447         0         0         64.0         16.0           1         1,447		0	1	1		1	1	-		
3         851         0         0         66.0         18.1           2         490         0         0         74.1         14.0           2         764         0         0         0         74.1         14.0           2         764         0         0         0         74.1         14.5           4         1,992         0         0         0         74.1         14.0           5         2,557         0         0         0         68.9         10.6           4         2,528         0         0         0         68.9         10.6           5         1,159         0         0         68.9         10.6         68.9         10.6           6         3,474         0         0         0         68.9         10.6         68.9         10.6           6         3,474         0         0         0         68.9         10.6         68.9         10.6           6         3,474         0         0         0         68.9         10.6         68.9         10.6         68.9         10.6         69.9         10.6         69.9         10.6         69.9		2	382	0	0	0	0	83.0	0	17.0
2         490         0         0         74.1         14.0           2         764         0         0         74.1         14.0           2         764         0         0         74.1         14.0           4         1,992         0         0         60.4         15.9           5         1,159         0         0         69.3         10.6           4         2,528         0         0         69.3         10.6           5         1,139         0         0         69.3         10.6           6         1,139         0         0         69.3         10.6           6         1,139         0         0         69.3         10.6           6         1,134         0         0         69.3         10.6           6         1,487         0         0         69.3         10.6           6         1,487         0         0         69.3         10.6           6         1,487         0         0         69.3         10.6           7         1,487         0         0         64.0         11.2           1,252         0 <td></td> <td>ım</td> <td>851</td> <td>0</td> <td></td> <td>0</td> <td>) C</td> <td>0.09</td> <td>18.1</td> <td>21.9</td>		ım	851	0		0	) C	0.09	18.1	21.9
1,030         0         74.1         14.0           2         764         0         0         75.1         14.5           2         764         0         0         49.8         18.8           4         1,992         0         0         49.8         18.8           5         2,657         0         0         66.3         18.8           4         2,528         0         0         69.3         0           5         1,474         0         0         69.3         0           6         3,474         0         0         69.3         0           7         1,487         0         0         69.3         0           8         1,487         0         0         69.3         0           9         1,487         0         0         69.3         13.7           1         1,487         0         0         69.3         13.3           1         1,487         0         0         69.3         13.3           1         1,487         0         0         69.3         11.3           2         1,274         0         0 <t< td=""><td></td><td>2</td><td>067</td><td>0</td><td>0 0</td><td>0 0</td><td>0 0</td><td>59.8</td><td></td><td>7 07</td></t<>		2	067	0	0 0	0 0	0 0	59.8		7 07
2         764         0         0         70.0         14.5           2         1,956         0         0         49.8         14.5           4         1,956         0         0         40.4         15.9           4         1,159         0         0         68.9         10.6           4         2,657         0         0         68.9         10.6           5         1,342         0         0         68.9         10.6           6         3,474         0         0         66.9         8.2           1         4,474         0         0         66.9         10.6           4         3,474         0         0         66.9         3.7           5         1,444         0         0         66.9         3.7           4         3,474         0         0         66.9         3.7           5         1,444         0         0         66.9         3.7           5         1,444         0         0         66.9         3.7           6         3,474         0         0         66.9         3.7           7         1,194		1 ("	1 030	0 0	o c	0 0	o	7/.	1 0 0	10
2 1,992 0 0 0 0 49.8 18.8 18.9 18.8 19.2 19.92 0 0 0 0 0 69.3 19.6 19.9 19.2 19.9 19.0 0 0 0 0 69.3 19.8 19.8 19.9 19.0 0 0 0 0 69.3 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0		n c	T,000	0 0	<b>&gt;</b> C	0 0	> <	T. C.	) + t	2 7
4         1,926         0         49.6         15.9           5         2,657         0         0         40.4         15.9           6         1,139         0         0         68.9         10.6           7         1,252         0         0         0         68.9         10.6           8         1,342         0         0         0         68.9         10.6           1         1,342         0         0         0         69.3         10.6           1         1,342         0         0         0         64.0         10.6           4         3,474         0         0         0         64.0         13.3           1         1,867         0         0         0         64.0         13.3           1         1,875         0         0         0         64.0         11.3           2         1,704         0         0         0         64.0         11.3           3         1,65         0         0         0         11.2         11.2           4         1,04         0         0         0         0         11.2 <t< td=""><td></td><td>7 0</td><td>40/</td><td>0 0</td><td>&gt; 0</td><td>0 0</td><td>&gt; 0</td><td>0.67</td><td>L4:3</td><td>0.0</td></t<>		7 0	40/	0 0	> 0	0 0	> 0	0.67	L4:3	0.0
4         1,592         0         60,4         10.9           2         2,652         0         0         69.3         10.6           4         2,528         0         0         69.3         10.6           5         1,342         0         0         69.3         10.6           6         3,474         0         0         69.3         88.2           1         4,487         0         0         69.3         88.2           4         3,474         0         0         69.3         88.2           5         1,487         0         0         69.3         88.2           6         5,124         0         0         64.0         13.3           9         5,124         0         0         65.9         13.1           1         1,487         0         0         65.9         65.9           3         1,579         0         0         65.9         65.9           3         1,574         0         0         65.9         11.2           4         1,573         0         0         0         65.9         11.2           2         2,		7 -	906	0 (	<b>&gt;</b> (	<b>O</b> (	0 (	49.8	10.00	31°4
5       2,577       0       0       68.9       10.6         4       2,528       0       0       0       64.9       10.6         5       1,342       0       0       0       64.9       44.0         6       3,474       0       0       0       64.0       37.2         1       1,487       0       0       0       64.0       37.2         4       3,325       0       0       0       64.0       37.2         1       1,487       0       0       0       64.0       37.3         2       1,274       0       0       0       64.0       37.3         3       1,573       0       0       0       64.0       37.1         3       1,573       0       0       0       67.0       67.0         1       1,573       0       0       0       11.2       67.5       11.2         1       1,573       0       0       0       0       64.0       11.2         2       1,573       0       0       0       0       11.2       11.2         1       1,573       0 <td< td=""><td></td><td>7 1</td><td>7,992</td><td>0</td><td>0</td><td><b>D</b></td><td>0</td><td>40.4</td><td>15.9</td><td>43./</td></td<>		7 1	7,992	0	0	<b>D</b>	0	40.4	15.9	43./
2       1,159       0       69.3       0         4       2,528       0       0       69.3       8.2         5       1,342       0       0       0       64.0       33.3         4       3,474       0       0       0       64.0       33.3         4       3,474       0       0       0       64.0       33.3         4       3,474       0       0       0       64.0       33.3         4       3,474       0       0       0       65.9       13.3         1       9,709       0       0       0       65.9       13.1         3       1,650       0       0       0       65.9       13.1         3       1,016       0       0       0       11.2       40.3       31.1         2       1,274       0       0       0       0       67.0       11.2         2       1,374       0       0       0       0       67.5       31.1         2       1,573       0       0       0       0       49.8       32.1         3       1,695       0       0       0 </td <td></td> <td>5</td> <td>2,657</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>68.89</td> <td>10.6</td> <td>20.5</td>		5	2,657	0	0	0	0	68.89	10.6	20.5
4         2,528         0         0         86.3         8.2           2         1,342         0         0         64.0         49.4         44.0           6         3,474         0         0         0         64.0         13.3           4         3,325         0         0         0         64.0         13.3           4         3,325         0         0         0         64.0         13.3           5         124         0         0         0         17.5         65.9           6         5,124         0         0         0         47.3         37.1           3         3,650         0         0         0         47.3         37.1           2         1,974         0         0         0         6.7         6.7           3         3,695         0         0         0         6.7         6.7           1         1,974         0         0         0         6.7         6.7           2         1,573         0         0         0         6.4         6.5           3         1,569         0         0         0         0		2	1,159	0	0	0	0	69.3	0	30.7
2 1,342 0 0 0 64.0 3,474 0 0 0 0 0 64.0 3,474 0 0 0 0 0 64.0 3,325 0 0 0 0 0 64.0 3,142 0 0 0 0 0 64.0 3,142 0 0 0 0 0 64.0 3,142 0 0 0 0 0 17.5 65.9 3 3,050 0 0 0 0 1.8 51.8 25.2 1,974 0 0 0 0 1.8 57.9 11.2 3 3,650 0 0 0 0 1.8 57.9 11.2 2 1,573 0 0 0 0 0 0 64.0 3 1,65 0 0 0 0 1.8 57.9 11.2 2 2,525 0 0 0 0 0 1.8 57.9 1 1,492 0 0 0 0 0 17.1 48.5 39.8 1 1,492 0 0 0 0 0 17.1 48.5 39.8 1 1,492 0 0 0 0 0 17.1 48.5 39.8 1 1,494 0 0 0 0 0 17.3 37.6 1 2,120 0 0 0 0 0 17.1 63.8 7.6 1 2,120 0 0 0 0 0 17.1 63.8 7.6 1 2,120 0 0 0 0 0 0 0 0 17.1 63.8 7.6 1 2,120 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		7	2,528	0	0	0	0	86.3	8.2	5.5
6 3,474 0 0 0 0 57.2 13.3 3 1,487 0 0 0 0 0 64.0 3.7 4 3,325 0 0 0 0 0 53.5 19.9 1 976 0 0 0 0 17.5 65.9 3 2,709 0 0 0 0 1.8 51.8 25.2 3 3,165 0 0 0 0 0 0 54.0 37.1 2 1,974 0 0 0 0 0 0 54.5 1 1,016 0 0 0 0 0 0 0 54.5 2 1,573 0 0 0 0 0 0 0 0 54.5 1 1,492 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		2	1,342	0	0	0	0	49.4	0.44	9.9
3         1,487         0         0         64.0         3.7           4         3,325         0         0         0         17.5         65.9           1         976         0         0         0         17.5         65.9           5         1,24         0         0         0         47.3         3.1           3         2,709         0         0         0         47.3         3.1           3         3,650         0         0         0         47.3         3.1           2         1,974         0         0         0         6.7         3.1           3         3,695         0         0         0         6.7         40.3         32.1           2         1,974         0         0         0         0         54.5         32.1           3         3,695         0         0         0         0         54.6         40.3           2         2,525         0         0         0         0         44.8         33.8           1         1,492         0         0         0         0         44.6         14.3           1		9	3,474	0	0	0	0	57.2	13.3	29.5
4         3,325         0         0         0         53.5         19.9           6         5,124         0         0         0         47.3         3.1           3         2,709         0         0         0         47.3         3.1           3         3,050         0         0         6.7         3.1           2         1,974         0         0         6.7         37.1           2         1,974         0         0         6.7         37.1           3         3,695         0         0         0         6.7           2         1,573         0         0         0         6.7           2         2,525         0         0         0         49.8         38.2           1         1,492         0         0         0         17.3         37.6           1         1,269         0         0         0         17.3         37.6           1         1,269         0         0         0         17.3         37.6           1         2,120         0         0         0         17.3         14.3           2         1		3	1,487	0	0	0	0	0.49	3.7	32.3
1         976         0         0         17.5         65.9           3         2,124         0         0         0         47.3         3.1           3         3,050         0         0         1.8         51.8         25.2           3         3,050         0         0         0         47.3         37.1           2         1,974         0         0         0         6.7         37.2           2         1,974         0         0         0         6.7         37.9           3         1,616         0         0         0         6.7         40.3           2         2,525         0         0         0         49.8         38.2           1         1,492         0         0         0         46.5         39.8           1         1,566         0         0         0         17.3         37.6           1         1,269         0         0         0         0         48.6         14.3           1         2,120         0         0         0         0         44.7         36.9           1         2,119         0         0 </td <td></td> <td>4</td> <td>3,325</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>53.5</td> <td>19,9</td> <td>26.6</td>		4	3,325	0	0	0	0	53.5	19,9	26.6
6         5,124         0         0         1.8         5,124         0         2.4         0         47.3         3.1           3         3,050         0         0         2.4         0         43.2         37.1           2         1,974         0         0         0         0         6.7           1         1,016         0         0         0         6.7           2         1,974         0         0         0         6.7           3         3,655         0         0         0         6.7           2         1,573         0         0         0         6.7         40.3           2         2,525         0         0         0         0         49.8         38.2           1         1,492         0         0         0         0         48.5         39.8           1         1,269         0         0         0         0         47.1         13.6           1         1,269         0         0         0         0         48.6         14.3           2         1,210         0         0         0         0         14.3		_	976	0	0	0	0	17.5	62.9	16.6
3     2,709     0     0     1.8     51.8     25.2       3     3,650     0     0     2.4     0     43.2     37.1       2     1,974     0     0     0     1.8     57.9     11.2       3     3,695     0     0     0     54.5     32.1       2     1,974     0     0     0     54.5     32.1       3     3,695     0     0     0     54.5     40.3       2     1,573     0     0     0     49.8     38.2       2     2,525     0     0     0     49.8     38.2       1     1,492     0     0     0     47.1     13.6       1     1,492     0     0     0     17.3     33.8       1     1,269     0     0     0     48.6     14.3       1     2,120     0     0     0     17.3     25.0       1     2,119     0     0     0     17.1     44.7     36.9       94     63,655     0     0     0     0     22.4     45.7     36.9       0     0     0     0     0     0     0     44.7     <		9	5,124	0	0	0	0	47.3	3.1	9.67
3       3,050       0       2.4       0       43.2       37.1         2       1,974       0       0       0       59.0       6.7         1       1,016       0       0       1.8       57.9       11.2         2       1,573       0       0       0       6.7         2       2,525       0       0       0       49.8       38.2         1       1,492       0       0       0       17.3       39.8         1       1,269       0       0       0       17.3       37.6         1       1,269       0       0       0       14.3       14.3         1       1,269       0       0       0       17.3       37.6         1       1,249       0       0       0       14.3       14.3         1       1,269       0       0       0       0       14.3         1       2,120       0       0       0       0       14.3         2       1       0       0       0       0       0       14.7         1       2,120       0       0       0       0 <td< td=""><td></td><td>8</td><td>2,709</td><td>0</td><td>0</td><td>0</td><td>1.8</td><td>51.8</td><td>25.2</td><td>21.2</td></td<>		8	2,709	0	0	0	1.8	51.8	25.2	21.2
3         3,165         0         0         0         59.0         6.7           2         1,974         0         0         0         1.8         57.9         111.2           1         1,016         0         0         0         54.5         40.3           2         1,573         0         0         0         64.8         40.3           2         2,525         0         0         0         49.8         38.2           1         1,492         0         0         0         48.5         39.8           1         1,269         0         0         0         17.3         37.6           1         1,269         0         0         0         17.3         37.6           1         1,269         0         0         0         17.3         37.6           1         1,269         0         0         0         0         14.3           1         2,120         0         0         0         0         14.3           2         1         2,119         0         0         0         1.1         44.77         36.9           4         63,6		3	3,050	0	0	2.4	0	43.2	37.1	17,3
2         1,974         0         0         1.8         57.9         11.2           3         3,695         0         0         64.5         32.1           2         1,573         0         0         0         49.8         38.2           2         2,525         0         0         0         48.5         39.8           1         1,492         0         0         0         47.1         13.6           1         1,269         0         0         0         47.1         13.6           1         1,269         0         0         0         47.1         13.6           1         1,269         0         0         0         47.1         13.6           1         1,249         0         0         0         0         14.3           1         2,120         0         0         0         14.3           1         2,119         0         0         0         1.1         44.7         36.9           94         63,655         0         0         0         0         2.4         45.7         36.9		3	3,165	0	0	0	0	59.0	6.7	34.3
1         1,016         0         8.4         0         54.5         32.1           2         1,573         0         0         0         64.6         40.3           2         2,525         0         0         0         7.1         48.5         33.8           1         1,492         0         0         0         47.1         13.6           1         2,056         0         0         0         17.3         37.6           1         1,269         0         0         0         48.6         14.3           1         2,78         0         0         0         48.6         14.3           1         2,494         0         0         0         70.1         .8           1         2,119         0         0         0         44.7         36.9           94         63,655         0         .2         6         53.9         20.2		2	1,974	0	0	0	1.8	57.9	11.2	29.1
3       3,695       0       0       54.6       40.3         2       1,573       0       0       0       49.8       38.2         2       2,525       0       0       0       49.8       38.2         1       1,492       0       0       0       47.1       13.6         1       2,056       0       0       0       17.3       33.8         0               1       2,126       0       0       0       0       14.3         1       2,120       0       0       0       1.1       63.8       7.6         1       2,119       0       0       0       1.1       44.7       36.9         94       63,655       0       .2       .2       .6       53.9       20.2		<del></del>	1,016	0	0	8.4	0	54.5	32.1	5.0
2 1,573 0 0 0 0 49.8 38.2 2 2,525 0 0 0 0 0 7.1 48.5 39.8 38.2 1 1.492 0 0 0 0 0 17.1 48.5 39.8 39.8 1 1 2,056 0 0 0 0 0 17.3 37.6 1 1 1,269 0 0 0 0 0 0 17.3 37.6 1 1 1,269 0 0 0 0 0 0 0 17.3 37.6 1 14.3 1 1.2,120 0 0 0 0 0 0 1.1 63.8 7.6 1 1.1 6		3	3,695	0	0	0	0	54.6	40.3	5.1
2     2,525     0     0     7.1     48.5     39.8       1     1,492     0     0     0     47.1     13.6       1     2,056     0     0     0     47.1     13.6       1     1,269     0     0     0     48.6     14.3       0            1     778     0     0     0     14.3       3     4,494     0     0     0     1.1     63.8       1     2,119     0     0     0     1.1     64.7     36.9       94     63,655     0     .2     .6     53.9     20.2		2	1,573	0	0	0	0	8.67	38.2	12.0
1     1,492     0     0     0     47.1     13.6       1     2,056     0     0     0     47.1     13.6       1     1,269     0     0     0     48.6     14.3       0            1     7,78     0     0     0     70.1     .8       1     2,494     0     0     0     2.4     45.2     25.0       1     2,119     0     0     0     0     44.7     36.9       94     63,655     0     .2     .6     53.9     20.2		2	2,525	0	0	0	7,1	48.5	39.8	9.4
1     2,056     0     0     0     17.3     37.6       1     1,269     0     0     0     48.6     14.3       0            1     778     0     0     0     70.1     .8       3     4,494     0     0     0     2.4     45.2     25.0       1     2,120     0     0     0     1.1     63.8     7.6       1     2,119     0     0     0     44.7     36.9       94     63,655     0     .2     .6     53.9     20.2		1	1,492	0	0	0	0	47.1	13.6	39.3
1 1,269 0 0 0 0 48.6 14.3 1 778 0 0 0 0 70.1 .8 3 4,494 0 0 0 0 2.4 45.2 25.0 1 2,120 0 0 0 1.1 63.8 7.6 1 2,119 0 0 0 0 2.4 44.7 36.9 94 63,655 0 0 .2 .6 53.9 20.2		-	2.056	C	C	C	0	17.3	37.6	45.1
0		-	1.269	0	o C	0	0 0	48.6	14.3	37.1
1     778     0     0     0     0     70.1     .8       3     4,494     0     0     0     2.4     45.2     25.0       1     2,120     0     0     0     1.1     63.8     7.6       1     2,119     0     0     0     44.7     36.9       94     63,655     0     .2     .6     53.9     20.2		0		)	)	1	, !	2 1	- 1	. 1
3     4,494     0     0     2.4     45.2     25.0       1     2,120     0     0     0     1.1     63.8     7.6       1     2,119     0     0     0     44.7     36.9       94     63,655     0     .2     .6     53.9     20.2		- (	778	C	C	C	0	1 02	a	1 00
1 2,120 0 0 0 1.1 63.8 7.6 1.1 2,119 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		4 (*	707 7	> <	> <	0 0	· ·	H C		7.70
1 2,119 0 0 0 1.1 63.8 7.8 7.8 36.9 94 63,655 0 0 .2 .6 53.9 20.2		٦.	1,177	0 0	0 0	0 0	7 . 4	7.04	22.0	† · / · / ·
1 2,119 0 0 0 0 44.7 36.9 94 63,655 0 0 .2 .6 53.9 20.2		7	2,120	0	0	0	1.1	63.8	7.6	27.5
94 63,655 0 0 .2 .6 53.9 20.2			2,119	0	0	0	0	44.7	36.9	18.4
94 63,655 0 0 .2 .6 53,9 20.2	Tor									
	1001	76	63,655	0	0	. 2	9.	53.9	20.2	25.1

Table 27.—Veneer grade recovery by scaling diameter, block grade 3, red and white fir

1 1		;																																					1		1
	D	1 1	43.8	29.5	30.00	31.5	33.1	26.0	25.6	27.7	47.2	29.8	3/.2	38.4	37.3	47.8	48.6	52.1	57.8	6.64	48.7	56.0	57.1	56.9	70.1	71.3	/4./	77.4	36.7	7 7 7 9	, c	50.2	36.3	38.6	26.8		1	75.1		45.6	
	C plug	1 1	9.5	4.0	7.3	1.7	5.	1.2	4.	9. 0	0 -	L.4	3.7	0.4	6.7		8.6	20.3	11.3	8.3	0	. 7	5.7	13,3	12.3	12.2	0.00	30.2	21.5	0 0 0	21.1	10.4	1 9	36.6	33.7		ļ	19.4		<b>™</b> . ⊗	
e	S	Percent	46.7	66.4	6.1.9	66.8	66.4	72.8	74.0	71.7	52.8	8 6 6	0.80	57.5	56.0	52.1	42.8	27.6	30.9	41.7	51.3	43.3	37.2	29.8	17.6	16.5	10.0	10.4	7,15	25.5	7 01	37.2	2.79	24.8	39.5		1	5.5		46.1	
Veneer grade	B patch	Per	0	0 (	o c	0	0	0	0	0	0 0	<b>&gt;</b> (	<b>-</b>	o c	o c	o o	0	0	0	0	0	0	0	0	0	0 (	<b>&gt;</b> 0	> 0	> <	o c	o c	o	o c	) C	o C	· ¦	1	0		0	
	В		0		<b>&gt;</b> C	» o	0	(1/)	0	0 (	0 (	<b>o</b> 0	<b>&gt;</b> 0	0 0	2	) 0	0	(1/)	0	ı.	0	0	0	0 (	0	0 (	> 0	0 0	> <	0 0	o	o c	o c	o C	· c	, !	1	0		$(\overline{1})$	
	A patch		0	0 0	o c	» o	0	0	0	0 (	0 0	<b>-</b>	<b>&gt;</b>	o c	o c	0	0	0	0	0	0	0	0	0 (	0	0 0	<b>&gt;</b> 0	<b>&gt;</b> C	o c	> <	o c	o c	0 0	0 0	o C	ì	ţ	0		0	
	A	1 1	0	0 0	<b>&gt;</b> C	0	0	0	0	0 (	0 (	5	Τ. (	<b>&gt;</b> C	o c	0	0	0	0	0	0	0	0	0 (	0	0 (	<b>-</b>	<b>-</b>	0 0	o	o	o c	o c	0 0	) C	,	!	0		$(\overline{1}/)$	
Veneer	3/8-inch basis	Square feet	105	775	3,060	3,983	5,994	5,440	6,631	7,436	6,871	/, UL/	7 695	7 7 26	9 232	4,575	8,647	7,785	7,278	7,744	3,531	8,134	8,723	6,562	3,193	1,696	7,433	0,200	7 185	5,571	1 424	7, 883	7 904	1,751	2 987		!	2,010		199,829	
Number	of blocks		9	23	3.9 7.8	947	49	36	36	33	31	23	4,0	5 T	20	12	1.5	14	11	12	2	11	10	∞ √	4	2 1	~ u	n ×	t v	> <	- 1	l ur	, 0	1 —	. ~	10	0	1		599	
Block	diameter (inches)		œ	ον ,	T T	12	13	14	15	16	17	10	19	21	22	23	24	25	26	27	28	29	30	31	32	33	4.0	35	200	33	30	40	77	42	6.7	77	45	94	,	Total or average	

 $\frac{1}{2}$  Less than 0.05 percent.

Table 28.—Veneer grade recovery by scaling diameter, block grade 4, red and white fir

diameter (inches)  11 2 3 12 3 13 9 14 6 6 15 15 11 11 11 11 11 11 11 11 11 11 11	3/8- basi Square	A	_					
2 3 9 6 6 8 8 113 111	Square feet	:	A patch	В	B patch	O .	C plug	1
2 9 8 8 111	82	1	1	1 1	Percent	1 1 1 1	1 1 1 1	1 1 1 1
3 6 8 8 11 11		0	0	0	0	46.3	43.9	8.6
9 6 8 113 111	187	0	0	0	0	1.6	0	98.4
6 8 11 11	528	0	0	0	0	15.3	0	84.7
8 13 11	387	0	0	0	0	32.0	0	68.0
13 11	736	0	0	0	0	15.4	0	9.48
11	2,026	0	0	0	0	8.7	1.9	4.68
1	1,886	0	0	0	0	21.6	.3	78.1
_	1,161	0	0	0	0	19.6	7.	80.0
16	04,070	0	0	0	0	10.2	5.6	84.2
13	3,833	0	0	=	0	15.4	1.2	83.3
10	2,936	0	0	0	0	6.7	. 2	93.1
10	3,337	0	0	(1/)	0	8.6	0	90.2
12	5,475	0	0	0	0	9.1	6.3	84.6
80	3,493	0	0	0	0	9.5	3.1	87.4
10	5,101	0	0	0	0	10.1	1.9	88.0
10	5,671	0	0	0	0	10.8	8.6	79.4
11	7,576	0	0	0	0	13.8	2.6	83.6
80	4,708	0	0	0	0	10.0	0	0.06
1.2	9,048	0	0	(1/)	0	15.5	4.4	80.1
7	3,197	0	0	0	0	9.4	4.	90.2
9	4,475	0	0	۲.	0	19.0	2.3	78.6
9	5,136	0	0	0	0	6.7	6.	92.4
7	766,9	0	0	0	0	4.3	9.7	86.0
7	9 '200	0	0	0	0	10.4	2.5	87.1
2	2,209	0	0	0	0	7.4	6.	91.7
3	2,989	0	0	0	0	6.5	0	93.5
5	4,302	0	0	0	0	2.9	4.2	92.9
5	5,448	0	0	0	0	8.3	1.3	90.4
2	2,941	0	0	.1	0	16.2	8.8	74.9
7	4,838	0	0	0	0	7.4	7.7	84.9
0	-	1	i	100	1	E L	S T	!
2	3,016	0	0	0	0	2.5	5.1	92.4
1	1,638	0	0	0	0	12.4	12.8	74.8
2	3,235	0	0	0	0	3.8	31.3	6.49
П	1,699	0	0	0	0	30.0	19.8	50.2
Total or								
average 236	120,858	0	0	$(\overline{1}/)$	0	10.5	4.7	84.8

 $\frac{1}{2}$  Less than 0.05 percent.

Table 29.—Veneer grade recovery by scaling diameter, all grades, red and white fir blocks

		1 1																					_								_,		_	_				_				
	Q	-	0	36.4	29.4	36.0	35.9	33.5	37.8	28.7	1.15	48.8	36.1	47.1	47.3	50.0	48.8	56.2	51.2	51.5	56.1	59.0	61.9	58.5	56.8	60.2	67.7	55.8	55.9	44.9	69.2	47.7	61.0	33.0	43.7	22.1	52.2	33.6	50.7	18,4		51.3
	C plug	1 1 1 1 1 1	0	7.6	0.4	2.2	2.1	1.5	1.0	1.2	j. α	2.7	1,8	5.0	3.9	7.7	5.5	4.9	ος <sub>(</sub>	14.0	7.7	5,5	5.4	10.8	8.6	14.2	6.9	20.3	13.0	21.3	6.7	22.7	10.9	22.7	10.7	18.9	19.7	23.6	13.3	36.9	4	10.0
Veneer grade	U	ent	0	56.0	66.5	61.8	62.0	65.0	61.2	70.1	50.0	48.5	62.1	47.8	48.8	9.44	42.7	37.3	39.6	34.5	36.1	35.5	32.7	30.7	33.4	75°T	24.9	23.6	30.1	33.8	21.1	26.9	28.1	44.3	42.4	29.0	28.1	41.1	35.4	44.7		38.4
Vene	B patch	Percent	0	0	0	0	0	0	0	0 0	<b>&gt;</b> C	0	0	0	0	0	0	0	ڊ • ر	0 0	0	0	0	0	0	4.	0 0	ຕ	0	0	0	2.6	0	0	3.0	0	0	1.7	9.	0	•	.2
	B	1 1 1	0	0	.1	0	0	0	0 ;	( <u>1</u> /)	o c	0	(1/)	10	(1/)	0	(1/)			(T)		0	(1/)	0	(1/)	)	) i	0	1.0	0	0	.1	0	0		( <u>I</u> /)	0	0 (	0	0	,	Τ.
	A patch	1	0	0	0	0	0	0	0	0 0	0 0	0	0	0	0	0	0	0	0 (	00	0	0	0	0	0 (	<b>&gt;</b> c	o c	0	0	0	0	0	0	0 (	0 (	0	0	0 (	0	0	•	0
	A		0	0	0	0	0	0	0	0 0	<b>&gt;</b> C	0	0	۲.	0	0	0	0	0 0	<b>&gt;</b> C	0 0	0	0	0	0 0	<b>&gt;</b>	0 0	0	0	0	0	0	0	0 (	0 0	0	0	0 (	0	0	;	(T)
Veneer	volume, 3/8-inch basis	Square feet	0	132	776	1,699	3,425	4,554	6,804	6,288	7,511	10,083	8,991	14,092	13,067	11,861	15,053	13,274	15,184	17,3/1	20,482	11,098	20,507	13,769	17,608	13,530	18,245	10,391	8,831	15,182	12,592	6,890	14,213	6,328	9,962	12,590	5,388	6,193	4,130	2,119	1	4T6,652
Number	of			1 /	24	40	55	54	61	47	4 √ ∪ α	2000	33	94	41	32	35	30	28	32	32	18	27	16	22	13	188	6	œ	14	11	2	10	4 ,	<b>9</b> 1		4.	4 (	2	1	1	116
Block	scaling diameter (inches)		7	~ 00	6	10	11	12	13	14	15	17	18	19	20	21	22	23	24	25 26	27	28	29	30	31	32	34	35	36	37	38	39	07	41	4.5	54.	77	45	94	47	Total or	average

 $\frac{1}{2}$  Less than 0.05 percent.

Table 30.—Distribution of veneer grade and item by thickness, grade 1 blocks, red and white fir

4					Veneer grade	a)			Total	Below grade
veneer item	בפווו	А	A patch	В	B patch	S	C plug	D	veneer volume	veneer volume
			1 1 1		– – Percent – –		1 1 1 .	l l	Square feet,	- Square feet, 3/8-inch basis
Full sheets	1/10 inch	0	0	0	7	52	07	4	8,702	29
	1/8 inch	0	0	0	0	35	58	7	2,718	12
	3/16 inch	1	;	1	1	1	1	!	0	
Half sheets 1/10 inch	1/10 inch	0	0	ij	0	73	13	13	3,192	5
	1/8 inch	0	0	0	0	77	27	29	2,847	55
:	3/16 inch	0	0	0	0	97	0	3	5,759	
Random width 1/10 inch	1/10 inch	0	0	4	0	65	10	21	3,134	283
	1/8 inch	0	0	0	0	69	7	27	3,758	398
	3/16 inch	0	0	0	0	84	0	16	2,200	102

Table 31.—Distribution of veneer grade and item by thickness, grade 2 blocks, red and white fir

					Veneer grade	4)			Total	Below grade
veneer ltem	rem	· A	A patch	В	B patch	S	C plug	D	veneer volume	veneer volume
		-	1	1	- Percent -	-		1	Square feet,	- Square feet, 3/8-inch basis
Full sheets 1/10 inch	1/10 inch	0	0	Н	(7)	28	07	31	10,806	143
	1/8 inch	0	0	0	2	45	38	15	14,134	12
	3/16 inch	١	1	I	1	-	١	1	0	1
Half sheets	1/10 inch	0	0	0	0	61	11	28	4,915	10
	1/8 inch	0	0	0	0	51	22	27	7,441	9
	3/16 inch	0	0	0	0	75	0	25	6,754	6
Random width 1/10 inch	1/10 inch	0	0	Н	0	62	2	32	7,334	621
	1/8 inch	0	0	0	0	69	7	24	9,423	673
	3/16 inch	0	0	0	0	72	0	28	2,848	258

 $\frac{1}{2}$  Less than 0.05 percent.

Table 32.—Distribution of veneer grade and item by thickness, grade 3 blocks, red and white fir

					Veneer grade	e			Total	Below grade
Veneer item	tem	A	A patch	В	B patch	O	C plug	D	veneer volume	veneer volume
		1	t t t	1	- Percent -	1	1 1 1	-	Square feet,	- Square feet, 3/8-inch basis
Full sheets	1/10 inch	0	0	(1/)	0	65	10	41	22,491	222
	1/8 inch	$(\overline{1}/)$	0	0	0	31	22	47	56,647	48
	3/16 inch	1	1	i	1	1	1	1	0	-
Half sheets 1/10 inch	1/10 inch	0	0	0	0	41	П	58	8,730	30
	1/8 inch	0	0	0	0	34	7	62	23,379	120
	3/16 inch	0	0	0	0	75		25	31,667	27
Random width 1/10 inch	1/10 inch	0	0	(1/)	0	45	П	54	14,812	1,887
	1/8 inch	0	0	0	0	43	2	55	30,450	2,572
	3/16 inch	0	0	0	0	77	1	23	11,653	551

 $\frac{1}{-1}$  Less than 0.05 percent.

Table 33.—Distribution of veneer grade and item by thickness, grade 4 blocks, red and white fir

				Veneer grade	9			Total	Below grade
veneer item	A	A patch	В	B patch	O.	C plug	D	veneer volume	veneer volume
	1	1 1 1		- Percent -	-	1		Square feet, 3/8-inch basis	3/8-inch basis
Full sheets 1/10 inch	.h 0	0	0	0	œ	13	79	14,425	89
1/8 inch	0	0	0	0	3	18	62	12,129	48
3/16 inch	 		!	1	1		1	0	1
Half sheets 1/10 inch	h 0	0	0	0	6	e	88	19,988	103
1/8 inch	0	0	0	0	2	e	92	17,604	144
3/16 inch	ь 0	0	0	0	14	0	86	10,277	36
Random width 1/10 inch	.h 0	0	(1/)	0	15	П	84	20,237	1,761
1/8 inch	0	0	(1/)	0	15	Н	84	21,476	2,568
3/16 inch	р 0	0	0	0	18	0	82	4,722	739

 $\frac{1}{2}$  Less than 0.05 percent.

Table 34.—Distribution of veneer grade and item by thickness, all blocks combined, red and white fir

1					Veneer grade	a			Total	Below grade
veneer item	rem	A	A patch	В	B patch	Ü	C plug	Q	veneer volume	veneer volume
		1	1 1		Percent -	-	1		Square feet,	Square feet, 3/8-inch basis
Full sheets 1/10 inch	1/10 inch	0	0	$(1/\sqrt{1})$	н	35	21	43	56,424	462
	1/8 inch	(1/)	0	0	$(\underline{1}/)$	29	25	95	85,628	120
	3/16 inch	ŀ	1	1	1	1	1	ŀ	0	ļ
Half sheets 1/10 inch	1/10 inch	0	С	$(\overline{1}/)$	С	29	4	29	36,825	148
	1/8 inch	0	0	0	0	27	<b>&amp;</b>	65	51,271	325
	3/16 inch	0	0	0	0	99	0	34	54,457	72
Random width $1/10$ inch	1/10 inch	0	0	(1/)	0	36	2	62	45,517	4,552
	1/8 inch	0	0	(1/)	0 .	39	er.	28	65,107	6,211
	3/16 inch	0	0	0	0	65	0	35	21,423	1,653

 $\frac{1}{2}$  Less than 0.05 percent.

Woodfin, R. O., Jr. and W. Y. Pong 1974. Veneer recovery of red and white fir--California. USDA For. Serv. Res. Pap. PNW-171, 48 p., illus.

Red and white fir grade recovery percentages are presented by short log and veneer block diameter classes. Less than 1 percent of veneer was recovered in A and B grades. Relationships of recovery ratio and square feet or cubic feet of veneer to log volumes are shown.

Keywords: Veneer mill studies, red fir, Abies magnifica, white fir, Abies concolor.

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The mission of the PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION is to provide the knowledge, technology, and alternatives for present and future protection, management, and use of forest, range, and related environments.

Within this overall mission, the Station conducts and stimulates research to facilitate and to accelerate progress toward the following goals:

- Providing safe and efficient technology for inventory, protection, and use of resources.
- 2. Development and evaluation of alternative methods and levels of resource management.
- Achievement of optimum sustained resource productivity consistent with maintaining a high quality forest environment.

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